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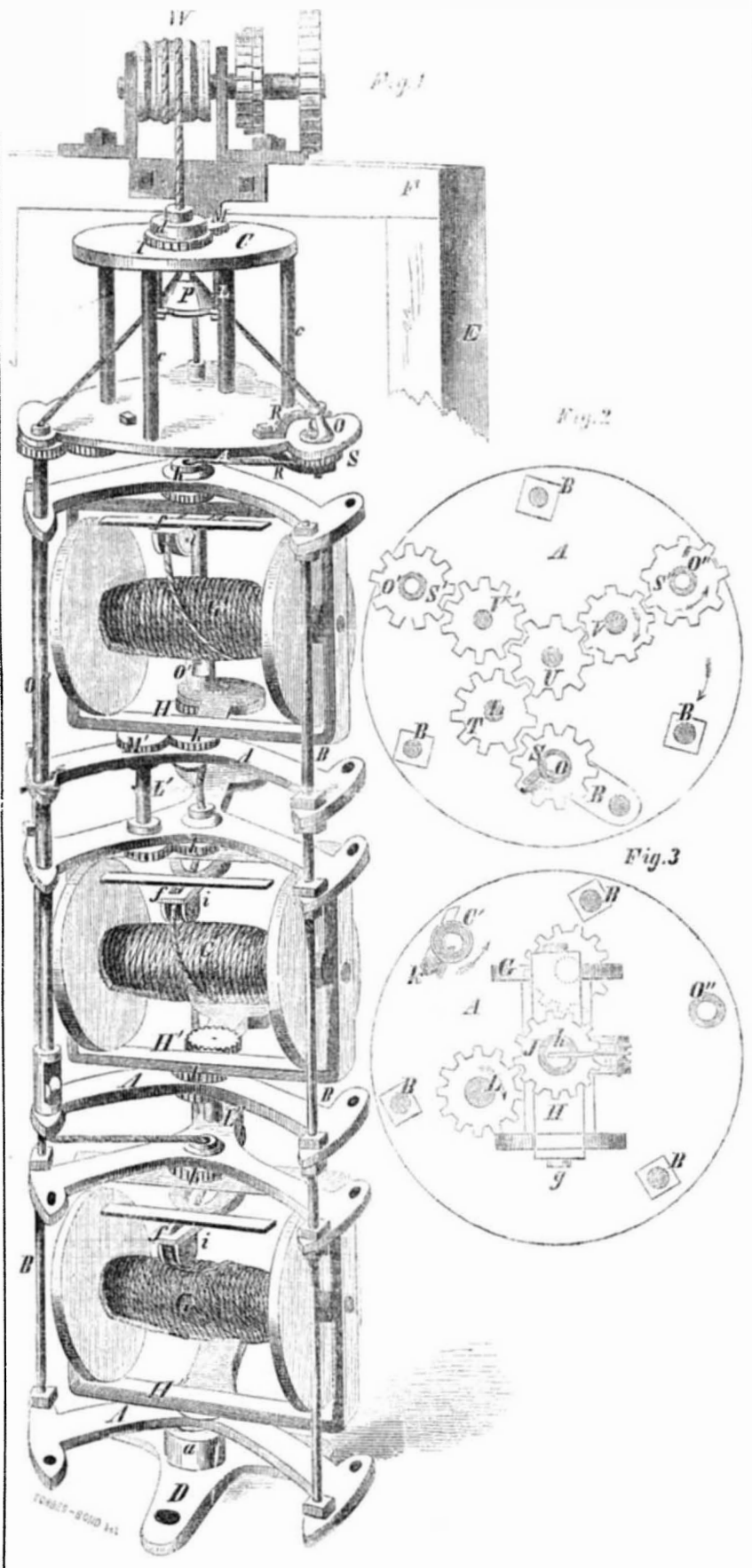
BOONE'S ROPE MACHINE.



Boone's Rope Machine.

The accompanying figures illustrate the rope making machine for which a patent was issued, on the 15th of July last, to Thomas G. Boone, of Brooklyn, N. Y.

Rope is formed by twisting together a number of strands. The strands receive an extra twist before laying them into rope, to compensate for the twist that is unavoidably taken out of them in the act of laying or twisting them together in a contrary direction to their own twist. This additional twist put into each strand is termed the *fore-hard*, because it is put in before laying.

In this machine there are certain novel devices, and a peculiar arrangement of parts for twisting the strands and laying them into rope, whereby the axes of the strand spindles are brought to positions in line with the axis of the laying spindle, and when an even fore-hard is desired, no rotary motion of the strand spindles is required, by which the machine may be driven at a much greater velocity than practicable for other rope machines now in use, requiring less power to operate it, and besides, the peculiar arrangement of the parts reduces the machinery to a most compact form—occupying but a very small space.

Fig. 1 is a perspective view, fig. 2 is a horizontal section, taken under the lower plate of the laying-block, and fig. 3 is a horizontal section taken under the top plate of the upper strand spindle. Similar letters indicate like parts on all the figures.

The strand spindles, the laying block, and all the appertaining parts of the machine but the winding capstan, are carried by a rotating frame composed of a series of plates, A A A arranged one above the other, concentric to a common axis, and connected by uprights, B B B; the lowest plate has a journal inserted in a step, *a*. The upper plate, A, is rigidly attached by pillars, *c c*, to a drum, C, which has a hollow journal working in a guide bearing, *d*, which is placed in the same vertical line with the supporting journal in the lower bearing step, *a*. These bearings may be secured in the frame, E F, or otherwise in a factory, the bed plate, D, being bolted to the lower floor. The main rotating frame constitues the laying spindle, twisting the strands into rope, and motion is given thereto by a horizontal belt passing around drum C.

H H′ H″ are the strand spindles, each one having a square frame, with journals, *h h*, at top and bottom, and a spool, G, containing the strand, secured, (as usual) by a transverse pin, *g*, passing through the frame. The journals, *h*, of the several strand spindles are fitted to bearings in the centers of certain of the plates, A A, fig. 3. The journals, *h h*, of the strand spindles, the lower journal of the frame in step, *a*, and the upper journal in bearing, *d*, of the main frame are in line with one another, so that all have a common axis. The upper journal of each spool spindle is hollow, and the strands pass from the spools up through them, as shown in fig. 1,—each strand passing up over a guide roller, *i*, on arm, *f*, and thence through the hollow journals.

I is a stationary spur gear around the exterior of the upper bearing, *d*; the upper strand spindle, H, has similar spur gear of the same size as I, one on its upper, and the other on its lower end—J, fig. 3, is its upper one; the middle strand spindle, H′, has similar spur gear, and the lowest strand journal has similar gearing attached to its upper journal. L is an upright shaft working in bearings. In the head of drum, C, is a spur wheel, M, of the size of I, and gearing into the latter. It is secured on the upper end of shaft L, fig. 2; another spur wheel, of the same size, is secured at the bottom, gearing into the spur wheel on the top of the uppermost strand spindle. By means of these four gear wheels, arranged as described, the upper strand spindle, H, is kept stationary, while the main frame, A B, rotates—the shaft, L, being caused to rotate on its axis once during every rotation of the main frame by the motion it receives round the stationary gear, I,—and the strand spindle, H, is also kept stationary. The shaft, L′, is similar to the upper one, L and has a like spur gear on its top and bottom, the latter gearing into like spur wheels on a shaft, L″, and the strand spindles, H H′ H″, are compelled to be stationary while the main frame revolves.

O O′ (C′ by mistake, fig. 3,) O″, are three upright tubes; the strands from the hollow journals of the spools, G, pass up through these to the laying block, P. The tube, O works in bearings in two plates, R R, bolted to the top and bottom of the top plate, A; the other two strand tubes are fitted to rotate in bearings in the same plate; their lower bearings rotate respectively in plate A, above strand spindle H′, and the plate above strand spindle H″. The strands coming from the spools through the hollow journals of the strand spindles are conducted by these tubes, as shown, up to the laying block, P, and are then twisted into rope.

Each of the conducting tubes has an opening near its bottom, in which is a roller, K, round which the strand passes. These conducting strand tubes have secured to their upper ends spur gear, S S′ S″, (fig. 2,) corresponding in size with the other gears described. The gear, S, meshes with wheel T, of similar size, on shaft L. The gear T, meshes with gear, U, of similar size, fitted loosely on a stud secured in the center of the top plate, A; and between this gear and those S′ and S″, are interposed the gears, V′ and V″, which are fitted to studs, by which means *all* the conducting tubes, O O′ O″, are rotated in a corresponding manner in the opposite direction to the main frame.

W is one of two capstans in stationary framing The several strands from the spools, G G G, are conducted up through their tubes to the laying block, P, of the main rotating frame to the capstan, and a suitable motion is given to the latter to take up the laid rope. The laying or twisting of the rope is accomplished by the revolution of the strands around the axis of the laying spindle, and when a fore-hard in the strands equal in turns to that of the lay is desired, it is performed as described, without any revolution of the laid portions of the strands in the finished rope, or of the unlaid ends of the strands, or of the spindles which carry them. In this particular, this machine differs from other rope machines, and embraces much originality. The revolution of the strands to produce the lay of the rope being effected between the unlaid ends and the laid portions while those parts are stationary, involves the necessity of the strands receiving such a separate rotary motion in a direction contrary to the lay as is imparted by the tubes, O O′ O″, on their own axes—the additional twist which the strand first receives is carried forward through the tubes for a *fore-hard*. A greater or less fore-hard in the strand may be produced by simply varying the relative sizes of the gears, I and M. Any amount of tension on the strands may be obtained by increasing the friction on the strand spools by springs attached to the strand spindles. The horizontal section, fig. 2, conveys a clear representation of the action of the strand tubes, and fig. 3 that of the strand spindles, with their hollow journals, *h*, and pin, *g*, that secures a spool in the frame.

We have seen published statements of practical rope-makers, certifying to the superior rope made by this machine, and that it could be driven at double the speed of common rope machines with half the power. It is well worthy of general attention from rope manufacturers, on account of its originality and practical advantages, it being simple, and so compact that it can be set in a space of no greater area than that occupied by a flour barrel. This machine was exhibited at the late Fair of the American Institute; the Committee on such machinery state that it was the best rope-machine on exhibition, but by mistake was only awarded a second class premium.

For more information address A. & J. T. Speer, No. 212 Broadway, this city.

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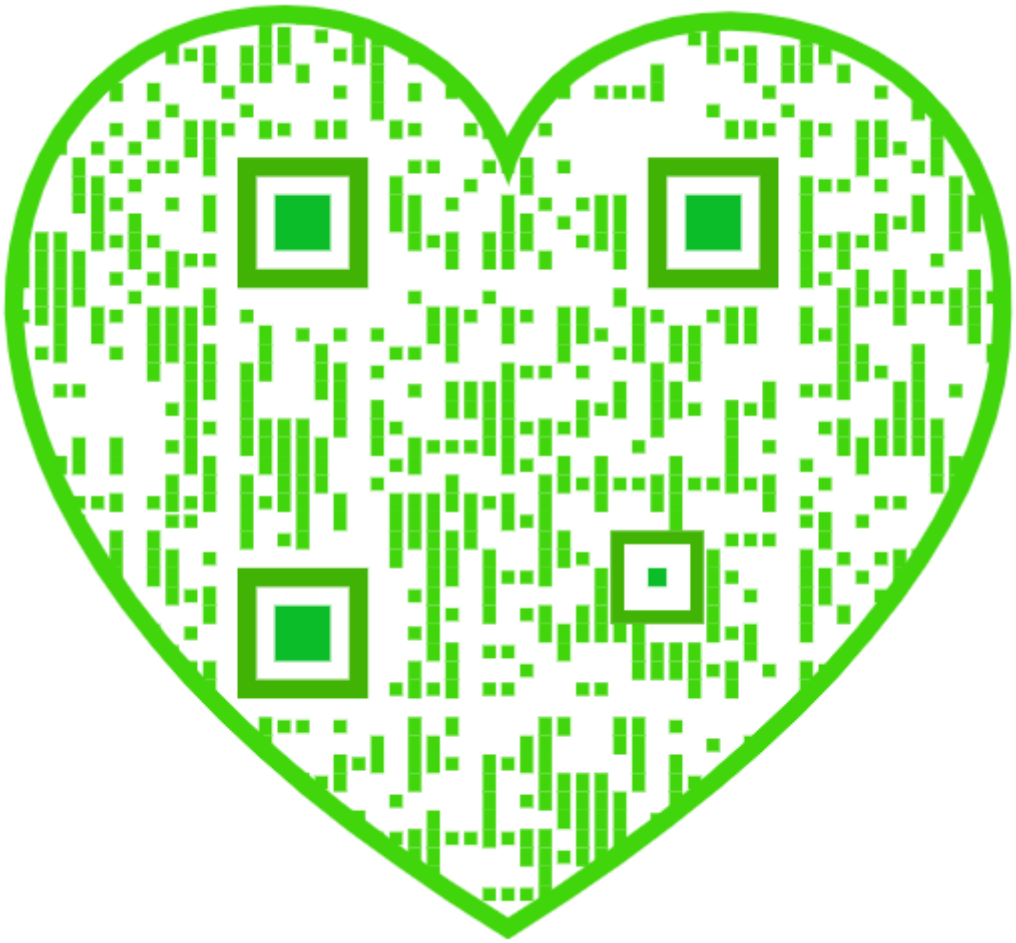

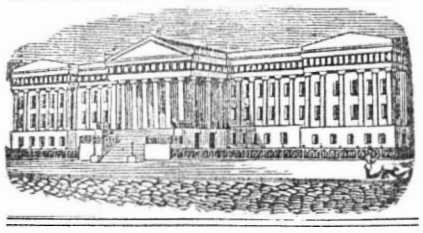

[Reported officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING FEBRUARY 17, 1857.

HAIR TRIGGERED GUN LOCK—Jonathan Altman, of Armstrong county, Pa.: I claim the mode described of setting the double trigger by the act of cocking the gun as set forth.

EXTENSION CHAIRS—Saml. J. Anderson and Nelson Richardson, of Erieville, N. Y.: We do not claim the levers, d, for they have been previously used for similar or analogous purposes. But we claim

The levers, d, and folding seats, B, attached to the box, A, as shown, the box being formed of two parts, a b, connected by a hinge, c, and the whole arranged as described for the purpose set forth.

[By a peculiar combination of a series of jointed levers provided with legs, and a series of folding seats attached to a box, Messrs. Anderson & Richardson have produced a very convenient article of household furniture. It can be transformed easily into an extended seat, washstand or table, and when folded it is very compact, and occupies bu a small space.]

SEED PLANTERS—Leonard Arnold, of Janesville, Wis: I claim employing two frames in constructing the machine, the forward frame resting on the axle of the principal or driving wheels, and the rear frame resting on the axle of the covering wheels, and extending forward and under the forward frame to which it is jointed, and acting as a lever in elevating the forward frame, driving wheels and plows clear from the ground in turning round, and in passing from point to point substantially as and for the purposes set forth.

PHOTOGRAPHIC CAMERA BOX—Luzerne M. Bolles and Washington G. Smith, of Cooperstown, N. Y.: We claim, first, a swinging A, with ground glass permanently attached, as described and set forth for the purpose specified.

Second, The arrangement of the baths in the camera box to correspond with the operations of the plate holder through the mortise and grooves as set forth and described.

MAKING HAMES—Henry Burt and James T. Hedden, of Newark City, N. J.: We claim the use of the consecutive ring dies (0, 111, 2, 222) in connection with the angular grooves (a and a 2), stops (b and b 2) on the feed rollers (E and E 2), substantially as described, constructed and operating in the manner specified and shown.

GAS REGULATORS—John H. Cooper, of Philadelphia, Pa.: I do not claim the combination of valve spring and inverted cup, with the upper and lower chambers, the same having been in use for years.

But I claim placing the spring regulating the valve within the latter, made hollow for the purpose, in order to prevent the contact of the gas with the spring, in the manner and for the purpose substantially as specified.

BOSOM PINS—John P. Derby, of South Reading, Mass: Being aware that broaches or ornaments having the retaining pin hang so as to turn on a line parallel with the back of broach, have been used and patented by one Taylor, in England, and also being aware that the guard, B, has before been used for certain purposes, I do not claim that mode of attaching the pin, neither do I claim the guard, B, but as an improvement thereon.

I claim extending the arm, d, around the end, and along the side of back of broach, so that the point of pin being retained in the fingers can be entered under its extreme end, thus allowing said point to be protected by a guard when revolved to pla ce.

I also claim the combination of collar, f, with the cap n, and the post, K, which admits of the easy attachment of the pin, c.

CARPENTERS' BENCH CLAMP—James E. A. Gibbs, of Mill Point, Va.: I do not wish to confine myself to the particular devices I have described, as I claim combining the pivoted and bent clamp rod, D, with the sliding arm or lever, c, when the latter is so arranged as to jam the rod at any required hight, by means of screw or cam, or any equivalent mechanical contrivance.

ALLOWING CIRCULAR SAWS TO PLAY LATERALLY, INDEPENDENTLY OF THEIR SHAFTS—A. P. Gross, of St. Louis, Mo.: I claim the shaft, A, in combination with the sleeve, D, and springs, m, n, the saw, F, being attached to the sleeve, D, and the shaft, A, secured in its bearing, B, as shown, so as to prevent a longitudinal movement of the same, the whole being arranged as described for the purpose set forth.

[Every circular saw requires some lateral play to cut well; this invention consists in an improved method o giving the saw this end play, by attaching the saw to a collar on one end of the same shaft, and so combining it with spiral springs as to allow it the requisite and exact end play.]

CHIMNEY COWL—Moses H. Hale and Saml. Horton, of Newburyport, Mass: We do not claim the ventilator or chimney cap above referred to as patented by Emerson, but what we do claim as our invention, is as follows—and although it is not new to make a chimney cap with passages extending around its mouth of discharge, and for the purpose of receiving currents of air and directing them up into or over the discharge flue, we have applied such in a particular way, and under a peculiar arrangement of parts, which render our ventilator new and advantageous in some respects.

We claim the improved cap constructed substantially as described, viz, with a discharge pipe, A, the inverted frustum, E, the outer frustum, B, its wind passages, G G, and the shield or fender, C, arranged together essentially as specified.

METHOD OF GENERATING AIR BLAST—Isaiah J. Hendryx, of New York City; I claim, first, the cylinder constructed with a hollow shaft and divided into compartments, either on a line with the shaft, or spirally around it, said cylinder being partly immersed in water or other liquor, and revolving at an angle as described.

Second, I claim the cylinder with or without a hollow shaft, and extending the air chamber above and around the cylinder, said chamber passing far enough below the water line to prevent the escape of the air, the air being supplied to the cylinder through the hollow shaft, or by pipes passing along it, to the outside of the chamber, said pipes having valves opening inwards or immersing as described.

Third, I claim the cylinder revolving at an angle without being immersed with the liquor inside said cylinder as described

Fourth, I claim the application and use of the cylinder: its case, and contents, as herein described, for the purpose of passing air through hydro carbons and their vapors, or mixing air with other gases, for heating or illuminating, or any other purpose requiring a steady blast, I do not limit myself to the form of a cylinder, but claim any other shaped vessel, constructed of metal or other material, and operated as herein described, which will produce the intended effect.

EXCAVATING ROCK—J. C. Osgood, of Troy, N. Y.: I claim, first, excavating rock under water by means of the wedge-shaped chisel, whose length is greater than the depth of water when operated in the manner specified.

Second, I claim the spring head, B, or its equivalent, in combination with the chisel, operating in the manner substantially as set forth.

Third, the arrangement of the spring, S, within the loop or strap, o, of the turn buckle, in combination with the sliding nut, u, in the manner described.

GAS RETORTS—M. J. Miller, of St. Louis, Mo.: I claim the pipe, A, inserted so as to receive the gas at the bottom of the retort, as shown and described.

MACHINE FOR VARNISHING PERCUSSION CAPS—Chas. Hicks, of Haverstraw, N. Y.: I claim, first, the combination of a vertically moving frame, C C C, carrying a number of wires or rods, b b, or their equivalents to take up the varnish; a trough, F, to contain the varnish; and suitable guides above the said trough to receive a plate which carries the caps, the whole being constructed and operating together, substantially as herein described.

Second, The plate, H, containing holes corresponding in number and arrangement with the wires or rods, b b, or their equivalents arranged relatively to the trough, F, the vertically moving frame, C C C, and the guides G, substantially as herein described for the purpose set forth.

[A very minute quantity of varnish must be deposited in a percussion cap to make the percussion powder adhere to it; this process has heretofore been generally performed on one cap at once—one at a time—in the machine in which the caps are made. By this new varnishing machine, several hundred caps may be varnished at once, ready for being charged by powder—the charging and ramming being subsequent operations performed by the machine. A number of caps to be varnished are simply thrown upon a shaking plate formed with holes to receive them, and they find their own way into their places, and are then charged at once by a series of wires carrying varnish and dipping into each. This invention is very ingenious and useful.]

FOLDING BEDSTEADS—Benj. Hinckley, of Troy, N. Y. I claim in portable folding bedsteads, connecting and bracing the folding portions and intermediate legs by the double cog hinges attached to the side rails, and having their bearings in the intermediate posts, substantially as set forth.

GEARING FOR WAGONS—Edgar Huson, of Ithaca, N Y.: I claim so making the frame described as to leave the forward extremities of said frame open, so as to receive the pole or thills between and back of the forward ends of the side springs—thus bringing the animal nearer the wagon, and thereby making the draft easier, and requiring less room in which to turn.

BRICK PRESS—Samuel Lillie, Jr., of Fort Wayne, Ind. I do not claim the mud mill, for that is well known; but I claim forcing the clay into the molds and compressing it therein by means of a hollow plunger, E, fitted and working within the box, C, and connected with the platforms, I J, on which the molds are placed, so that the plunger and mold to be fitted, rise and fall together, substantially as shown and described.

[In this machine a hollow box with a grate in its bottom, is employed for a plunger, to force the clay into the molds and there is an adjusting platform for allowing the plunger and molds to operate correctly when gravel or stones may be in the clay. The plunger box for stuffing the molds is operated in pressing by a treddle, but it descends by its own gravity; as one set of molds passes away filled, another set are forwarded to take their place. This is a very simple, compact, and cheap brick machine.]

ATTACHING EXTRA TOP-SAILS TO VESSELS—E. H. Linnell, of Orleans, Mass.: I do not claim the use of an extra top-sail yard, nor the holding it stationary, i. e., so as not to be raised or lower d, as both the use of an extra top-sail yard, and so holding it, have long been known.

But I claim attaching and hanging the extra top-sail yard to the top mast itself, by means of the combination of the collars, f and g, turning on the top mast, the forked brace, h, connecting said collars, and the stationary annular plate, h', on which the lower collar, g, rests and turns, so that said extra top-sail yard shall swing from the axis of the top mast as a center, and secure the advantages specified.

FASTENING SKATES—Henry Pickford, of Boston, Mass. I claim uniting the skate blade to the sole of the boot or shoe, substantially in the manner and for the purpose above described.

SELF-DISENGAGING CAR COUPLING—J. C. Price, of New Philadelphia, O.: I am aware that sliding bars or bumpers have been used on either side of the platforms, for the purpose of disconnecting the car couplings; this I do not claim. Nor the device for detaching the link by means of inclined or wedging surfaces for lifting out the coupling pin, by an oblique strain upon the draw bar, as such a device was patented by James Turner, July 20, 1852.

But I claim the employment of two obliquely set sliding head blocks, stop bars, connected by a turning link or plate, which is hollowed out and beveled inward on each or its edges, in combination with the hinged buffer pin plate, which is furnished with two outwardly beveling projections on its under side; said parts being arranged relatively to the buffer head, and operating in the manner and for the purposes set forth.

[This invention is designed to render the cars capable of uncoupling, in case of actual danger from the locomotive running off the track, and at the same time to prevent a possibility of their uncoupling when one of the intermediate cars of the train jumps the track, or the forward end of it gets off the track. Heretofore, with all self-uncoupling devices, much inconvenience has been experienced from the intermediate uncoupling, or part of the train detaching and remaining behind when no actual danger exists. Mr. Price's device for avoiding this inconvenience is beautiful and simple, and can be applied to cars at present in use, which employ the common connecting links, by simply altering the buffers of the cars.]

ALLOWING CIRCULAR SAWS END PLAY INDEPENDENTLY OF THE DRIVING SHAFT—Wm. S. Reeder, of St. Louis, Mo.: I claim the arrangement and combination of an additional driving shaft, D, with the shaft, B, that carries the saw, for the purpose described.

BOAT OARS—Rufus Rode, of Manchester, Pa. I claim the means by which I back water, when the oar is to be used for that purpose, the oar to return to its place when feathering, by means of lever, fulcrum, and springs, as described.

SPINNING FLYERS—J. N. Sawtell, of Lowell, Mass.: I do not claim the process of casting cast-iron around wrought-iron, whether the wrought-iron be or be not heated when the molten cast-iron is poured thereon, as such process is well known.

Neither do I claim the constructing of the flyer of two different metals without regard to how these two metals are united to each other, as different metals are now used in the formation of many articles.

I claim the manufacture of flyers, substantially in the manner described, that is to say, casting on the polished arms, E E, the neck or nozzle, F, of metal, when the former are prepared by the application of a proper composition, so as to render the adherence of the nozzle to the arms secure, as set forth.

HARVESTING GRAIN AND GRASS—Wm. Schnebly & Thomas Schnebly, of Hackensack, N. J.; We claim the thin trapezoidal-shaped finger or guard, in combination with cutters, E S, when said finger is constructed with an open area or space, m m, conforming to the same finger, and with recesses, m m, in front and rear to support and guide the cutters near the center of the finger or guard, substantially in the manner described.

SPLITTING SHOE PEGS—Nathaniel H. Shaw, of Farnworth, N. H.: I do not claim the combination of a splitting knife with a fluted feeding roller, or its equivalent, being aware that such has before been claimed.

But I claim the feeding blade, G, when arranged substantially as described, whereby its movement is produced and adjusted to suit all the requirements of the machine under all circumstances in the most simple and perfect manner.

I also claim the arrangement of the holding bar, E, in such a manner as to enable its motions to be produced without interference with the alternate action of the splitting knife and feeding blade, and to be adjusted for the different sizes of pegs so as not to disarrange the relative positions and movements of said holding bar, splitting knife and feeding blade, substantially as specified.

FITTING GAS PIPE—Caleb C. Walworth, of Boston, Mass.: I claim the coupling constructed with long, short and inclined faces, substantially as described, and operating for the purposes set forth.

HARNESS FOR HORSES—Joseph Smith, of Delaware, O.: I claim, first, the side bars, c c, connected by cross bar, D, or their equivalents, constructed and arranged in the manner and for the purpose set forth.

Second, I claim pads, i i, or their equivalents, constructed and arranged in the manner and for the purpose set forth.

Third, I claim triangular coupling, M, or its equivalent, constructed and arranged in the manner and for the purpose set forth.

SECURING HUBS ON AXLES—Alfred E. Smith, of Bronxville, N. Y.: I claim the mode of securing the pipe box and hub on the axle, by forming the inner end of the pipe box with a flanch fitted to enter a recess in a collar fitted and secured into the inner end of the hub, substantially as described, when this is combined with a projecting collar on the axle, and a loop ring on the axle, and the collar on the hub being connected by turn buttons or equivalents therefor, substantially as and for the purpose specified.

FEED WATER APPARATUS TO STEAM BOILERS—Andrew J. Vandegrift, of Delaware, O.: I am aware that the heater, the exchange chamber, and three valves and three pipes have been used for like purposes; these I do not claim.

But I claim the fourth valve, G, and the escape pipe, H, in combination with the above described devices, or their equivalents, combined, arranged and operated for the purpose and in the manner set forth, or in any other substantially the same.

DAMPER REGULATORS FOR STEAM BOILERS—Wm Webster, of Morrisania, N. Y.: I disclaim the use of any cylindrical casing for the enclosing of the piston, and also the piston, as described in the specification and represented by the drawing of Wm. T. Gale, patented July 1st, 1856

But I claim the arrangement of the several parts, as described, and for the purpose set forth.

ELECTRIC TELEGRAPHS—Wm D. Wesson, of Chillicothe, O.: I claim constructing the stationary telegraph line of a series of immovable and interposed movable conductors, and furnishing the vehicle with a circuit breaker, circuit receivers, and conductors, arranged to operate substantially as set forth, for the purpose of breaking the circuit through the main line at a point or points where the vehicle is passing, and completing the circle through, so that by suitable telegraphing instruments or apparatus carried by the vehicle, communications may be transmitted and received by the vehicle to and from other vehicles, or to or from stations at a distance, either while the vehicle or vehicles are stationary or in motion, as set forth.

[The object of this invention is to adapt any electric telegraph to transmit communications between railroad trains, canal boats, and all vehicles that move in a track that is unvarying, or varies but little, either when they are in motion or while stationary. The principle of the invention consists in the construction of a complete telegraph line along the route to be traveled, and so forming it that its circuit may be broken at regular intervals by the passage of the train, vehicle, or vessel along the route. A telegraph instrument is provided on the train or vehicle, and all the means necessary to effect a connection with its apparatus, and to the stationary line, so as to form a circuit, and transmit a message or messages. This is accomplished by employing movable conductors combined with fixed conductors on the main line, and connecting the apparatus on the train or vehicle with a movable conductor, thus making a flying telegraph office of the train or vehicle. The objects and aims of this invention are important and useful.]

PARING APPLES—David H. Whittemore, of Worcester, Mass.: First, I claim giving the slide, I, with its slicing knife attached, a curved or lateral motion, for the purpose of enabling the slicing knife to leave the core in a shape for the easy removal of the apple, by means substantially as set forth.

Second, I claim the arrangement consisting of the traveling knife carriage, I, with its tilting lever, K, playing over the guard, G, which keeps the lever engaged with the screw while the apple is being pared, and releases for the free return of the carriage, as set forth.

CUTTING VEGETABLES—H. A. Willard, of Westminster, Vt.: I claim the cutter, B, in combination with the metallic cutter plate, A, together with the particular arrangement of the cutters upon the cutter plate, in such a manner that several are acting upon the vegetable at the same time, and that as soon as one has commenced another immediately follows, so that while a portion are leaving the vegetable and holding it firmly to the plate, others are commencing, preventing, by this arrangement, the vegetable from rolling or dodging, and keeping it continually in contact with the knives, thereby cutting with greater rapidity, with less power, and leaving the cut vegetable in a more desirable shape for mastication than any machine now in use.

OPERATING VALVES FOR STEAM ENGINES—Samuel R. Wilmot, of Watertown, Conn.: I claim the valve motion described for operating the valves of steam engines, consisting essentially of a twisted traverse rod, of a traveling slide, and of the stops which limit the turning of the slide, or their equivalents, combined together, and operating substantially as set forth.

RAISING WATER—Daniel K. Winder, of Cincinnati, O.: I claim the arrangement and combination, substantially as described, of annular reservoir, f, with the plunger, j, tube, l, flexible pipe, p, valves, h i k, and cock, r, for the purposes explained.

CRIMPING BOOTS—J. G. Baker, Jr., (assignor to himself and Charles Bradfield,) of Philadelphia, Pa.: I claim the combination of the swiveled stay rods, U, with their cross heads, T, and thumb screws, S, when arranged with the former, Q, as stated, for the purpose of facilitating the removal of the finished boot front, and introduction of another piece, as represented.

SASH FASTENER—Thomas Floyd, (assignor to himself and G. H. Merklein,) of Chambersburgh, Pa.: I do not confine myself to the application of the sash fastener, as shown, as I may find it convenient to let it into the frame, causing it to operate against the edge of the sash style; to do so it will only be necessary to make the handle, E, at right angles with catch, D, in which position it will work equally well against the edge of the style, and be found as convenient as at present applied.

I claim the triangular or catch lever, D, and thumb lever, E, in combination with the cylinder, F, the follower, H, with piece, I, attached, and spring, G, as described, and for the purposes set forth.

TILE MACHINE—Junius Foster, (assignor to John Herbold, George Kuhn, and Junius Foster, aforesaid,) of Brooklyn, N. Y. I do not claim the plunger, h, in itself. Neither do I claim cutting off the clay or tile with a knife or wire.

But I claim the combination of the reciprocating plunger, h, with the rollers, K and l, slide or trough, o, and knife or wire, 8, when the said parts are arranged for joint operation, substantially in the manner and for the purposes specified.

CURTAIN FIXTURES—Lewis B. Gusman, (assignor to himself, Henry W,, and Henry Safford,) of Philadelphia, Pa.: I do not claim the general application of a lever nip as a substitute for teeth, to prevent slipping.

But I claim the use of a lever, A, constructed substantially as described, when the said lever is caused to operate upon the bracket, B, in supporting a window curtain, by means of the upward strain of the cord, D, the whole being arranged and operating together in the manner and for the purpose set forth.

VARNISH CAN—Alonzo Marshall, (assignor to Benjamin Marsh,) of Newark, N. J.: I claim connecting the two vessels by a pipe, in the manner and for the purpose described.

SECURING THE PANELS OF FIELD FENCES—C. P. Garlick, of Amadoa, Minn. Ter., and G. M. Blackstone, of Mainville, O.: We claim the combined uses of the mortises, S, and wedges, W W, in the chain, g, when arranged with and used for connecting the lower part of the panels of the fence together, all as and for the purposes described.

RE-ISSUES.

PRESSING BONNETS AND BONNET FRAMES.—Wm. Osborn, of Louisville, Ky. Patented Aug. 19th, 1856: I do not claim any of the separate parts set forth; neither do I claim pressing or forming a separate flaring face piece, or a separate crown piece for bonnets or bonnet frames.

But I claim pressing the whole of a bonnet or bonnet frame, including the flaring piece, side, crown, and tip, at one operation, by dies, substantially as specified, whether said bonnet or frame be formed of one or of several pieces, and irrespective of the particular shape of the bonnet or frame.

I also claim forming the side, crown, and flaring face piece of a bonnet frame in one piece or at one operation, as specified.

MANUFACTURE OF HOSIERY—Wm. H. McNary, of Brooklyn, N. Y. Patented Dec. 23d, 1856: I do not confine myself to the use of any particular machinery to produce the results described.

But I claim the production of the heels and toes of hosiery by knitting a piece of spherical or other suitable form on the cylindrical or straight portions of the leg or foot, by any mode of operation in which the stitches are dropped or left upon the needles, and taken up again, substantially as described, whereby the whole of the leg and foot is enabled to be produced, by a continuous operation of the machinery or devices employed.

CLOTHES PINS—George W. Parker, of Fitzwilliam N. H. Patented March 18, 1856: I claim, first, the use of holes in a wheel, or of tubes secured to a wheel, and into which the pieces of wood are fed, and are thus retained in and moved forward to the right position to be acted upon by the lathe saw or bit.

Second, I claim the sliding or vibrating lathe and tail block, whereby the pieces of wood to be turned, are carried forward to the action of the cutters or chisels.

Third, I claim the cutters or chisels in combination with the lathe.

Fourth, I claim a holder, essentially the same as shown and described, to hold the pieces while being sawed or bored, the succeeding piece forcing the preceeding one out of the holder, and it drops between the holder and saw or bit, and whether the holder be movable or stationary, the saw or bit being made to move to and from the holder, or the holder be made to move to and from the saw or bit.

Fifth, I claim a saw or bit, either movable or stationary, in combination with the holder.

Sixth, I claim a punch, or its equivalent, to force the pieces into the holder.

DESIGN.

WOOD STOVES—A. C. Barstow, of Providence, R. I.

A Swift Ship.

The Liverpool (Eng.) *Post* contains the following tribute to an American ship :—

"The celebrated clipper ship *Dreadnought* was launched 1,108 days ago, during which time she has made twenty-one passages across the Atlantic ocean, traversing 65,100 miles, carrying about 47,000 tuns of merchandise. On two several occasions she brought later news from the United States than the regular steamers, and we published third editions of our paper on each occasion—the first with four, and the latter three days' later news."

Since the above was published, this ship has made an extraordinary passage from Liverpool to this city, the time occupied (from land to land) being only fifteen days, and that in stormy weather.

The *Dreadnought* was built at Newburyport, Mass., by Messrs. Currier & Townsend, who, we understand, are building a new clipper for the same firm—Dey & Co., this city,—which they assert will surpass the *Dreadnought*.—Our steamship builders must look to their laurels.

Petition for Extension of a Patent.—Fire Proof Safes.

Daniel Fitzgerald, of this city, has applied for an extension of his patent for improvements on fire-proof safes, which was granted June 1st, 1843, and will finally expire on the 1st of next June, unless extended.

Artificial Diamonds.

Some of our cotemporaries are at present giving, as a matter of news, an account of artificial diamonds, made by M. Despretz, of Paris. We published the account of this supposed discovery of artificial diamonds more than seven years ago, on page 302, Volume 5, SCIENTIFIC AMERICAN.

Mechanism of the Horse's Foot.

The elastic tissue packed within each hoof of a horse is so folded, backward and forward, that it would present a surface of four feet square were it spread out. Thus his limbs and the entire weight of his body rest on spring cushions packed in boxes.

Archimedes and the Lever.

Archimedes said, "Give me a lever long enough, and with my own weight I will move the world." "But," says Dr. Arnott, "he would have required to move with the velocity of a cannon ball for millions of years, to alter the position of the earth a small part of an inch. This feat of Archimedes is, in mathematical truth, performed by every man who leaps from the ground; for he kicks the world away from him whenever he rises, and attracts it again when he falls."

Erratum.

On page 171, in the article on remedies for sore hands, the word noxious, should read *in*-noxious, in reference to prussian blue, and rouge.

It is reported in this city that two mammath steamers are to be built for the California trade—each 7000 tuns burden.

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The Use and Choosing of Spectacles.

"In order that every person may be enabled to judge for themselves whether their sight may be assisted or preserved by the use of spectacles, an attentive consideration of the following rules will be found sufficient :—

1. When we are obliged to remove small objects to a considerable distance from the eye in order to see them distinctly.

2. If we find it necessary to get more light than formerly; as, for instance, to place the light between the eye and the object.

3. If looking at, and attentively considering a near object it becomes confused, and appears to have a kind of mist before it.

4 When the letters of a book run one into the other, and hence appear double or treble.

5. If the eyes are so fatigued by a little exercise that we are obliged to shut them from time to time, and relieve them by looking at other objects, and especially dark ones.

When all the circumstances occur, or any of them separately take place, it will be necessary to seek assistance from glasses which will now ease the eyes, and in some degree check their tendency to grow flatter; whereas, if they be not assisted, in time the flatness will be considerably increased by the effort the eyes are compelled to exert.

In every part of the world there are persons who sell spectacles as part of their trade, who have neither a knowledge of the anatomy of the eye nor the nature of optical glasses, so that it is no wonder so much injury is done. Thousands have to lament that ever they made use of glasses."

The above is from the Augusta *Chronicle and Sentinel*, communicated by an optician, and is useful information.

The best method of selecting glasses by those who require them is not given; a few words of caution on this head would have been valuable; let us add them :

When about to select a pair of spectacles, let a book of rather small but clear print be used, and such glasses be chosen as will enable it to be read at the same distance and with the same ease as before the eyes were impaired.

This is the only safe rule. No person can select a pair of spectacles for another. A pair that will cause the least pain or uneasiness to the eye in reading should at once be rejected. Some dealers in spectacles recommend persons wishing to purchase to take glasses that are better fitted for older persons, and use the argument, "they will last longer," meaning thereby, that because the wearer must grow older, they will serve him for a greater number of years. The selection of such a pair of spectacles will soon make the vision older. It is better to select a pair adapted for a person rather younger than one who is older.

Another thing to be attended to in looking for spectacles is to ascertain whether the eyes are mates. It is not unusual to find an inequality in the eyes of individuals. Watchmakers and engravers who use a magnifying glass usually with one eye, are frequently obliged to wear spectacles with a glass of different focus for each eye. In order to ascertain this, place the book at the distance at which the print is seen clearly with both eyes at once; then, without moving the head or the book, look with each eye alternately. If the eyes be mates, the print will be seen equally well with each. If the eyes are alike, then prove the glasses of the spectacles in the same way.

Having found the correct focus, observe if the glasses be pure and free from scratches and veins, or defects of any kind. This can be done by holding them from you towards a lamp or the window, when any such defect will be clearly seen.

The frames or bows of the spectacles should be light and elastic; silver and gold frames are the best. They should so fit on the face that the cilia or eye lashes will not touch the glasses; and they should set straight before the eyes, not down on the nose.

The foregoing observation, may be sufficient to enable persons in want of spectacles to make a correct choice; but it will always be most safe to make the purchase in person of an experienced optician.

Those who wish to purchase colored glasses for tender or diseased eyes, or to wear in journeys, exposed to a hot sun on sandy plains, or in exposure to snow and bright sunshine, to protect the eyes from excessive light, should select none but those of a green color. Blue glasses are more mischievous than useful, because they absorb different parts of the spectrum unequally, and transmit the extreme violet and blue rays. Green glasses absorb the extreme violet and blue rays, and transmit the red ray, producing a shorter spectrum, and a more distinct image on the retina of the eye.

We have glasses of various kinds, telescopes, and microscopes, to render objects more distinct during a faint light, or in what is termed *darkness*. Now as there are various animals and fowls—cats and owls—that can see about as well, if not better, during night than day, why may not a pair of spectacles, or some kinds of glasses, be invented to give man the same powers of nightly vision.

It is known that yellow colored glasses may be advantageously employed to excite the retina, and a lens can partially condense the faint light, yet nothing has been done in the optical art worthy of the name in relation to the invention or manufacture of night glasses

[For the Scientific American.]

History of Air Chambers on Pumps.

On page 88, this volume of the SCIENTIFIC AMERICAN, there is an illustrated description of the application of air vessels to the suction of pumps, for which a patent was issued to Messrs. Babbitt, Higbee & Plantz, on October 7th, 1842, and extended for seven years from last October. You add to the description, "this invention has never before been thus made known to the public." I wish to present my experience with air vessels on the suction pipes of pumps.

About the year 1831 the subscriber made the following experiment with a copper pump of 4-inch. bore, and a leaden pipe from 8 to 10 rods long, and 1 1-2 inch bore. By computations based on actual experiments, and a consideration of the fact that the time naturally expended by a single stroke of the pump handle was insufficient to allow the water to pass that distance and supply the vacuum with a steady and constant stream of water, I was led to devise the following contrivance to keep up a constant supply, and obviate the jerk of the pump handle. I used a piece of 3-inch leaden pipe, from five to six feet long, closed both ends air-tight, and bored a hole one inch in diameter near the center of its length, also a hole of the same size in the upper side of the 1 1-2 inch pipe as it lay in the trench, a few feet from the bottom of the pump, and connected the apertures of these two pipes by another piece of leaden pipe of one inch bore and about three inches long, so that when completed in the trench the axis of the larger pipe laid horizontally with, and perpendicularly over the axis of the feed pipe. It produced the desired effect; and when circumstances required the experiment was repeated.

In March, 1832, I used for the same purpose a cylindrical leaden vessel containing about two gallons. The feed pipe from the well entered the side near the bottom of the air vessel, and the pipe leading from the pump entered the top, and extended downward into the vessel, to about two inches from the bottom. In this case the distance and elevation were such that the owner was happily surprised at the successful result. Up to December 1832 I had oft repeated the last named, and made other like experiments, with uniform and complete success. I thenceforward recommended the air vessel to all my customers, where the elevation of the pump exceeded that of the fountain 15 feet, or the horizontal distance exceeded 30 feet, varying the relative size, form, and position of the several parts as experience and circumstances seemed to require. Sometimes I used a globe or spheroid, attached to the pipe like the 2-inch pipe before described, and sometimes in and around the axial line of the pipe, making an aperture in the pipe within the spheroid. It was found by these experiments, as I had pre-supposed, that the area, and consequently the cost of the pipe and the weight of the column of water leading from the fountain might be reduced, and since that time I have used 1-inch pipe leading from near the top of the air vessel or cylinder, and about 1 1-4 inch pipe from near the bottom of the vessel to the pump; or if 1 1-4 inch pipe were used for the supply, 1 1-2 inch pipe was used from the air vessel to the pump, and so on.

I used a dozen or more of air vessels in this manner before the winter of 1833, by which time my customers decided in favor of the last described arrangements. In the climate of Massachusetts and New Hampshire air vessels need to be thus constructed, and being set in the ground below, or otherwise protected from the frost, will always remain filled, when, to avoid frost in the pump, the water is discharged. A few strokes of the piston starts the water from the contiguous air vessel, lubricates and fills the pump and pipe without resort to other means. Again, if it be required to supply two or more pumps from the same single supply pipe, by this form of air vessel the main branch will remain filled and supply two or more branches leading from it, even if the pumps are placed at unequal elevations. In the latter case it is the best way to use a larger air vessel than those with a single pump. I have constructed pumps of metals, wood, and soapstone in various forms, for which the United States granted me a patent in 1834.

I have made pumps of soapstone with the air vessel constructed by boring an 8 or 9-inch hole horizontally into an L-shaped block; the barrel for the piston and lower box being bored into the upright portion of the L connecting the two apertures with a smaller hole. A follower or flange of soapstone connects with the feed pipe, and being packed and bolted to the end of the horizontal portion it produces a pump barrel and air vessel in one block. In truth, my time and your space will fail me to describe the many and various methods I have pursued in the structure and application of this useful article to pumps, engines, aqueducts, syphons, and air bellows, especially in the years 1833–'34, and '35. I applied it to the forcing pump of my own steam engine in the year 1833 in Groton, Mass., and used it there until the year 1842. I also used one in my steam bucket factory in Hingham, Mass., which was destroyed by fire about a year ago; and I have often recommended its use in connection with a forcing pump, and have seen it subsequently applied in repeated instances.

I prepared an application for a patent for the air vessel to pumps, but it was accidentally destroyed by fire in 1833, and some pump makers were prone to speak ill of it, until the public demand for the article enforced strong convictions of its utility. In 1834 '35 and 1840 I exhibited in the various lyceums and other public gatherings a working model glass pump and pipe with and without the air vessel of glass connected, also with glass syphons.

In 1840 the venders of these articles were equalled in number only by the ostensible inventors, both in Massachusetts and New Hampshire, and thus gave me occasion to give a lecture, and state the fact that those who had once denounced the article as worthless were the irresponsible parties who now claimed the discovery.

I have not been engaged in the pump business since 1835. My memory fails, but I can, if required, give the names and residences of more than seventy persons in Massachusetts and New Hampshire for whom I set pumps, with air vessels on, more than seven years previous to the date of Messrs. Babbitt, Higbee & Plantz's patent, and probably a majority of them have been in constant use to this day. It is believed that others have since the year 1835 made and sold cart-loads of the article.

ELIJAH WHITON.

South Hingham, Mass., Feb., 1857.

Foreign Summary.

Bramble's automatic grain scale, an American invention, exhibited in our Crystal Palace two years ago, has just been patented in Great Britain. The peculiarity consists in nearly shutting the stream of grain from the scale just before the proper quantity is received, and finishing with a very delicate stream, to avoid the effect of momentum.

The smaller wooden vessels of the British Navy are being hauled up on slips under cover, the better to insure their preservation. A tract of land at Hasler, near Gosport, Eng., has been selected to receive two hundred vessels, and the arrangements have been so far proceeded with that the first vessel, the *Gnat*, was hauled up about the 1st of January. The "gun boat and mortar boat flotilla" consists of five classes of vessels, gun vessels, gun boats, mortar vessels, mortar floats, and floating batteries. The three first-named are of wood, and the two last iron, and all but the mortar vessels and mortar floats are propelled by steam.

Seventy experiments published in a new number of *Weale's Series* on the form of ships, give results against hollow or wave-lined bows, in favor of rounded water-lines at the sides and at every point, and in favor of placing the greatest breadth of a vessel a little forward rather than aft of the center.

Richard's Snow-Plow, a Philadelphia invention, which has been tested with great success in this country during the past winter, has just been patented and illustrated in Great Britain. The principle is that of elevating the snow by a horizontal wedge to the hight of several feet before deflecting it sidewise, and also changing the deflectors so that it can be thrown both ways from a single track, or all in one direction from a double track, so as to avoid throwing the snow from one track upon the other, as with the common styles. It is an invention of importance, and has enabled trains to progress continuously through drifts from six to ten feet deep.

One of the Royal Engineers has patented a method of changing common lime into hydraulic cement, by heating it in a closed chamber with burning sulphur. The lime is to be spread on perforated floors of brick, in lumps of any size up to that of a cocoa-nut, and about one pound of sulphur is reported to be a fair allowance for each bushel of lime. The time required is not stated.

[Clay, flint, and magnesia have each their advocates as giving to mortars the property of hardening under water; but this use of sulphur, or of sulphurous acid (as would be developed by this process) is, we think, unheard of for this purpose.]

Tubes for conveying orders from deck to deck, or from or to aloft, are reported to have answered so well in the British Navy that the patentee, W. W. Bonney, has fitted similar tubes to the new 84-gun steamship *Retnizan*, of the Russian Navy. All the ships of the Russian Navy lying at Cronstadt are to be fitted with similar tubes in the spring.

G. Forster has arranged double doors at suitable distances apart in the workings or passages in mines, and connects them by iron rods, so that when one is opened the other is closed, to prevent a draft of air where it is not desired.

Albert Delfosse has invented an "Anti-Garrotte Boot Bayonet," a valuable attachment for those accustomed to kicking backwards—it being secured to the heel of the boot.

Captain Hubert, of the French Navy has patented the employment simply of tubes, and a fan-blower turned by hand, for ventilating vessels.

The ship-building yards of Great Britain are only partially employed, in consequence of the monetary pressure during the latter part of the war, and since the peace. Some new ship yards are springing up, however.

Marine engineers and mechanics, says the London *Artizan*, must look to Russia and other European states mainly for orders during 1857. There will be plenty of work to be done, it continues; and notwithstanding the temporary dislike entertained by the Russians, the bulk of the orders for their marine engines and machinery *must* come to Great Britain from whomsoever they may obtain their ships.

The new iron screw steamship *Nubia* of 2,250 tuns burthen, has recently run 4,500 miles, at an average rate of 11 9-10 knots an hour, and returned at the same speed—the greatest average ever made by a screw vessel on a long cruise.

Fish are common in the seas of Surinam with four eyes—two of them on horns which grow on the top of their heads.

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New Inventions.

Adjustable Drop-Motion for Steam Valves.

A motion for a preliminary injunction applied for by William B. Sickles against various steamers using Allen & Wells cut-off was granted on the 13th inst. by the U. S. Circuit Court, Judge Ingersoll delivering an elaborate opinion on the question. Permission was asked to run the *Augusta*, one of the ships using the offending invention, offering to give security to respond in damages if a final injunction should be ordered; but the plaintiff's counsel refused to consent, except on the payment of $12 per day.

Fogs, Fogs.

By late news from Europe, it appears that Constantinople and various other cities in the East, have also been favored this winter with with heavy fogs. A correspondent of the Boston *Journal*, writing from Constantinople Jan. 8th, says:—

"For nearly one week the streets of our city have been choked by a filthy fog, in opacty rivalling its cockney cotemporaries. Add to this the thick mantle of mud, of about the consistency of an inchoate hasty pudding, and you can imagine what jolly holidays we have had. Under such penumbrious circumstances, most laughable accidents will occur. One ferry-boat ran full tilt into the Sultan's winter palace, about a mile out of its course, terrifying the royal harem out of all measure of propriety. A friend undertook to cross the Bosphorus in a caique, at the expiration of an hour he found himself on the same continent from which he had started, but some miles further down. The expedition was given up as a bad job."

This description might answer for New York during the past week. The ferry-boats on the Hudson and East Rivers kept playing just such pranks as those on the Bosphorous—one running into a huge ship at one time, and at another running up against a floating hay stack. No very serious accident, so far as we have been able to learn, took place, thus showing that our pilots "have an eye for the weather."

New Pump Boring Machine.

Our engraving illustrates a new Boring Machine, invented by Morrison & Wyckoff, of Elmira, N. Y., and exhibited in operation at the late Fair of the American Institute, Crystal Palace, New York.

The usual method of boring pumps is by means of long augers, of the common form. This plan is slow, and also objectionable, because it is almost impossible to make the aperture straight.

In the present improvement, the boring is done by means of a long hollow tube, A, the extremity of which is furnished with cutters, The chips are thrown into the interior of the tube whence they are withdrawn by the rod, B, whose extremity is spiral-shaped, as seen; rod B turns in a contrary direction to A. The spiral form of B acts like a screw upon the chips, and removes them as fast as produced, towards the opposite end of tube A, where they fall out upon the ground. Rod B revolves somewhat faster than tube A. Separate belts and pulleys, C D, are employed to drive the tube and rod. The tip end of tubes A, on which the cutters are located, can be unscrewed and removed when sharpening is necessary.

The stuff, E, to be bored is clamped upon a carriage, and fed up against the end of tube A, by rack and screw, seen at F. The feeding is self-acting, and so, indeed, is the whole operation; all that is required of the attendant being to put on and take off the stuff. G are crank clamps, by which the stuff is secured to the carriage.

By other tools, not here shown, the ends of the pump stocks are finished in shapes shown in fig. 3, very slightly tapered, so that they may be forced together, and a strong water-tight joint formed.

This machine is adapted to the boring of all kinds of wooden pipes. It bores at the rate of ten feet per minute, does the work beautifully, and with an accuracy that is really wonderful. We saw a stick of wood at the Fair, 4 inches square, and 16 feet long, through which two holes, each of an inch and a quarter diameter, had been bored, side by side, and only 3-16ths of an inch apart. The boring tube, by which this was done, was only 8 feet in length, so that the stuff had to be turned and bored at opposite ends.

The invention is adapted to the boring of chain-pump boxes and wooden pipes of all descriptions and sizes. For conveying water, nothing can be cheaper than pipes of wood,

NEW PUMP BORING MACHINE.

Fig. 1

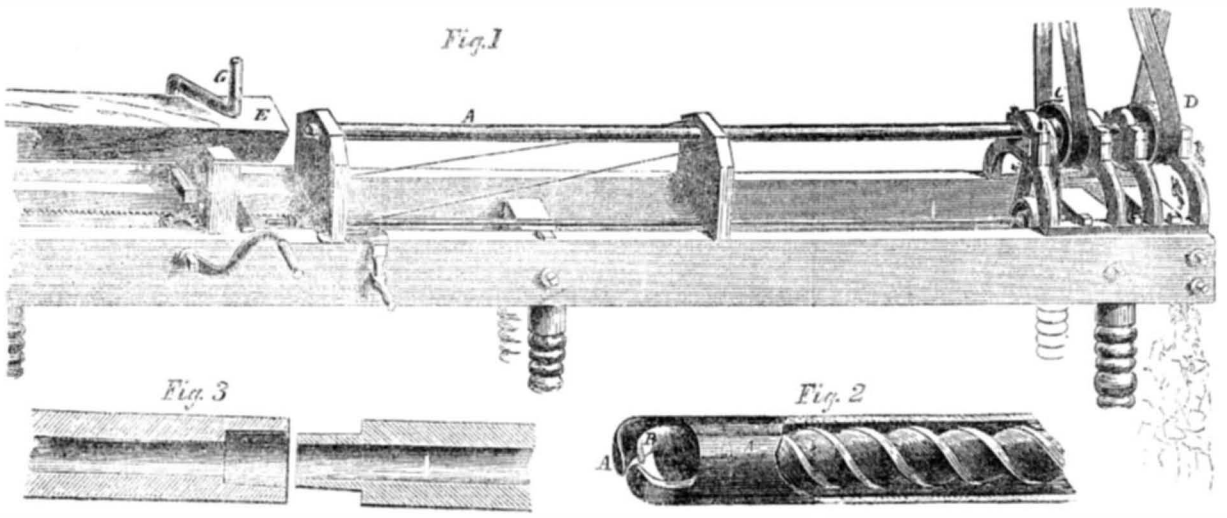


Fig. 3

Fig. 2

since the boring is so easily done that the expense is quite trifling. Very small stuff can be used, for the boring tube does not wrench, or have any tendency to split or burst the material.

The machine, it will be observed, is very simple. The frame is of wood, and the expense of construction is quite small. It is one of the most admirable inventions, for the purposes intended, that we have ever seen.

The above-mentioned boring machines are manufactured in Elmira, Chemung Co., N.Y., and kept for sale by the patentee, A. Wyckoff, to whom all letters of inquiry may be addressed.

A machine is now in operation in Elmira, speeded to bore ten feet a minute, where all who are interested may examine it.

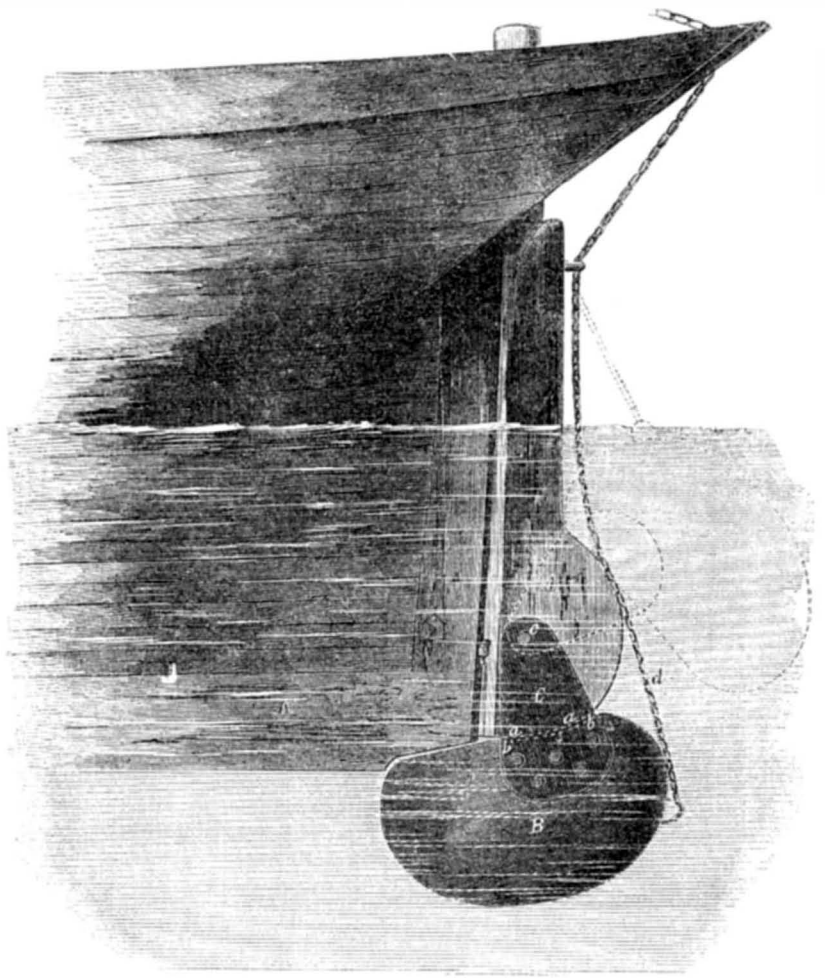
Circulars giving a full description of the machine and its uses will be forwarded by the inventor to all who may apply.

IMPROVEMENT IN RUDDERS OF VESSELS.

This figure represents the improvement in rudders of vessels for which a patent was issued to A. B. Crossman, of Huntington, Long Island, N. Y., on the 6th of January, 1857.

This is an important improvement in rudders, by which all tendency to press on the tiller may be easily removed or graduated to suit the helmsman; and the worst steering vessel can, without gearing of any kind, except the tiller, be very easily controlled. It consists of a movable attachment, termed an extension piece, so connected with a portion of the ordinary rudder as to admit of being held exactly in rear, or will swing underneath the rudder and partly beneath the keel, where it acts in undisturbed water with great force and effect, and by its position renders the rudder self-balancing; or it may be graduated to any desired pressure on the tiller by merely drawing back the extension-piece. When drawn entirely up, it constitutes a rudder of the usual width and effect, adapted to shoal water.

The invention in this figure is represented of a form applicable to shoal vessels, such as sloops, schooners, &c., but the same principle



is applicable for vessels of all sizes, with a slight modification of form.

A represents the rudder, and B the extension piece, which is also an auxiliary rudder. K is the keel of the vessel. C is a metal plate—there is one on each side—which is secured by bolts to B, and by an axis pin, *c*, they unite the extension piece with the main rudder, A.

The chain, *d*, is secured to an eye in the piece, B, and passes up, by which the extension piece can be elevated to the positions shown by the dotted lines. The curve, *a a* of the heel of the rudder is convex, that of the extension piece at *b b* is concave, so that the latter coincides with the form of the former to match it, and so slide up and down upon it, preventing all lateral play, sitting snug in its position under the rudder, and resting snug when raised upon the rudder. The extension piece, B, is heavier at the back end, as shown on the under side, to counteract the resistance and friction of the water when it is lowered.

When the vessel to which this improved rudder is attached is about to enter shoal water, the extension piece, B, is raised to the position shown in dotted lines; when it enters deep water the extension piece is lowered to the position which it is represented to be in—part of it under the keel, K, acting as a balance to the main rudder, A, which is hung entirely on one side of the pintles.

If the piece, B, should touch the bottom as the vessel passes over a shoal, no injury will be done, because it will swing backwards and upwards as the vessel moves onwards.

The advantages of this balanced rudder are numerous. Collisions at sea often take place during foggy weather, and sails, spars, and men are often lost overboard in squalls for want of that ready control, that instantaneous movement of the helm which it is the design of the extension piece, B, to give. The form of this rudder is such that the surging of the sea can have very little effect upon it; and there is no danger of twisting off the rudder head, or breaking the tiller.

In steering ships, especially during storms and in rough seas, it requires an immense power to control the helm, because of the great pressure exerted on the common unbalanced rudder. In such circumstances, double, and sometimes quadruple the number of hands are appointed to the steering wheel.

The ease with which this rudder can be controlled will allow of a ship to which it is applied being steered as easily by one man as with four by the common rudder. When a vessel cannot be controlled by its helm, it ceases to be safe—danger is apparent. Every improvement in rendering vessels more susceptible of control is not only an economical, but a humane invention; and, beyond a doubt, this self-balancing rudder enables a vessel to be more easily steered in all kinds of weather, in rough seas and rapid currents.

It is well adapted for flat-bottomed vessels, which are so difficult to steer before the wind. During a hurricane on Long Island Sound in the early part of this winter, when the large steamer *Connecticut* was disabled, and had to throw overboard her cargo, the flat-bottomed schooner *Flying Fish*, with one of these balanced rudders on, run one hundred miles before the gale, under the easy control of one man, without tiller ropes or gearing of any kind. The captain (E. P. Downing,) of this schooner has stated that but for this rudder, he believes the *Flying Fish* in that storm would have been unmanageable with all hands on board at the helm. It has been applied to four vessels, and has given great satisfaction in each case.

More information may be obtained respecting this invention by addressing Mr. Crossman.

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Scientific American.

NEW YORK, FEBRUARY 28, 1857.

Report of the Commissioner of Patents.

The Report of the Commissioner of Patents for the past year—on another page—is an able and interesting document. A very prominent feature of it relates to the self-supporting character of the Patent Office. This great Institution is sustained by no general tax, levied either directly or indirectly upon the people; its whole revenue of $192,588 is derived from inventors, and persons interested in patents. Such an Institution should receive the fostering care of government, and those who support it should always be treated with courtesy and consideration, especially when we take into account that, with their contributions to the revenue of the Patent Office, they have added more to the material wealth and power of our country than any other class of men.

Another striking feature of the Report is the increased number of patents which have been issued in proportion to the number of applications. This confirms the justness of the complaint we have oftentimes made, viz., that many applications for patents have been unjustly and unreasonably rejected. The Commissioner attributes the improvement made in such decisions to "the progress made both in and out of the Office in the knowledge of the proper principles and rules in accordance with which patents should be granted or refused." This is no doubt true in a measure, but he does not take to himself that credit which he deserves for the infusion of a better spirit in the rulings of the Patent Office. It makes no matter how well the principles and rules with which patents should be granted or refused, may be understood—in and out of the Patent Office—disagreements between applicants and Examiners will occur, according to the present constitution of the Office. The position which Examiners now occupy towards applicants for patents, is a great legal anomoly. They are constituted, or constitute themselves, judges, counsel, witnesses, and jury, in acting upon cases; and according to the spirit which prevails, they stand like opposing counsel to the claims of applicants, not as just judges awarding them their rights. The Commissioner sees this defect in the working of our present patent system, and we are happy to say, he suggests a change—an improvement. He says, in reference to the action of Examiners, "Such examinations are, doubtless, productive of much good, but, at the same time, I think it by no means certain, that this portion of our efficient action is placed upon the correct footing. I am every year yielding more and more to the conviction, that the decisions of the Office should not be peremptory, but merely advisory."

We agree with these sentiments. With a law providing for a writ of *scire facias*, as recommended in another part of the Report, the duty of Examiners should be merely advisory, and may well be left thus circumscribed.

An increase of patent fees is requested to provide for the increasing expenses of the Patent Office. The French and English methods of paying fees by instalments—several years apart—is suggested as a good means of augmenting the funds, and allowing unprofitable patents but a short existence. We have no special objections to urge against such a system, except its complexity. We decidedly object, however, to any *great* increase of patent fees, and the Report furnishes us with a strong argument in favor of low fees. It informs us that more American than English patents are now issued, and more patent applications are made than in France. Why is this? One overwhelming reason lies in the fact that our patent fees are lower than those of England and France. The greater the facilities which are provided for obtaining patents, and the lower the fees that are charged for them, so, in proportion, is inventive genius stimulated. The benefits derived by our country from such encouragement given to our inventors—and at no cost to the government—is beyond calculation. In the manufacture of many kinds of machinery and implements, our countrymen are now unrivalled, andthey excel just in those machines and implements for which the greatest number of patents have been obtained. Had our patent fees been as high as those of England and France, many of our most ingenious inventors would not have been able to obtain patents, and, as a consequence, they would have kept their inventions private, and our country would thus have lost the benefit of them. Great caution must therefore be exercised in increasing our patent fees.

The abolition of our law of caveat is suggested, and the English method of six months for enrollment of the specification—after the patent is granted—is suggested as a substitute. The reasons given for recommending such a change are, beyond all question, sound and good. As a whole, the Report is an excellent one. It is not a mere bald statement of what the Patent Office did last year, but it is a document, every section of which suggests new matter for reflection to every person interested in inventions and the progress of the useful arts in our country.

New Commissioner of Patents.

It is well known to our constant readers that Judge Mason, the present incumbent of the responsible office of Commissioner of Patents, holds the office with considerable reluctance, and, without doubt, devotes himself to its duties at a considerable pecuniary sacrifice. It is a subject of deep regret that the salary of this officer is not sufficiently remunerative to insure, beyond a doubt, the continued services of an arbiter so universally popular.

Since the signature of General Jackson was affixed, on that auspicious anniversary, the 4th of July, 1836, to the act creating the Office, and giving form to the code under which the industrial resources of our fertile country are becoming so rapidly developed—since the Secretaries of State, of War, and the like, were relieved by that act from what must always prove to general State officers annoying and troublesome to inventors, the office of Commissioner of Patents has never been filled with such credit as during the few years since the appointment of Judge Mason. His legal talent have been especially of great importance in this situation, as they have rendered plain and easy to him many complex questions which would otherwise have seriously disturbed his usefulness, while the courtesy and zeal with which he has prosecuted the investigation of every question have been not less worthy of remark. We sincerely hope he will not resign, and we have no idea that Mr. Buchanan will desire his removal.

Various rumors are afloat with regard to supplying the vacancy should one occur, but we are aware of no public movements in behalf of any one, except for Col. J. Franklin Reigart, of Lancaster, Pa. Col. R. has had much experience in connection with inventions, in various ways, and is well known to our readers as the author of a valuable life of Robert Fulton, and is a gentleman, we feel assured, from a long personal acquaintance, who would administer the affairs of the Office in a practical and impartial manner.

Movements in favor of Col. Reigart have appeared in several quarters. The most marked has been a meeting of inventors, (called, we think, without public notice, however,) at the Astor House, in this city, on the 10th inst., where a series of resolutions were passed, alluding very complimentarily to the merits of the book, and recommending him to the office. We feel tolerably well assured that whether Col. Reigart receives the appointment to the chief office or not, his services will in some form be required at the Patent Office under the forthcoming administration.

Magnetic Communication for Individual Purposes.

The Electro-Magnetic Telegraph, first established in 1844, a period within the memory even of the youngest of our readers, is becoming more and more an essential feature of civilized society. Its network covers a great portion of America and Europe, and even stretches through the jungles of India. It dives under the Atlantic to take hold on the small but important island of Nantucket, and traverses the St. Lawrence Gulf to communicate with Newfoundland. It connects Great Britain with Ireland, and again both these islands with the continent of Europe by several independent lines. It crosses the various straits and belts at the entrance to the Baltic, to take hold on Sweden and Norway, and dives under the Mediterranean to communicate with the dark continent of Africa. And having successfully threaded depths of 150 fathoms, and lengths of 600 miles; it bravely attempts at one bold stride to stretch 2600 miles under depths of two and a half miles in the mid Atlantic. It has accomplished miracles, and we have yet to see the end of its developement, both in enterprises which challenge admiration by their magnificence, and in the more ordinary and apparently trivial business operations.

Messrs. Hoe & Co., the printing press and saw manufacturers of this city, employ a line to connect their up-town with their Gold street establishments; and the New York and Erie, and some portions of what is now the New York Central, are early examples of its availability in railroad business, but we have recently learned a new use of this insiduous and active agent, which may interest parties in all quarters whose reputation is discussed through its agency, and may suggest other applications equally novel and ingenious.

A very extensive trade with parties distant and almost unknown, has originated in this city several "Agencies," who are well paid by traders and other business men, to keep posted on their books the reputation and standing of every storekeeper and manufacturer in the country. How they learn it is a secret, and not essential to this article, but that they do perform this service with great effect is now so obvious that similar concerns, employing in the same manner large retinues of clerks and sub-agents, are being established in the great commercial cities of Europe. One heavy wholesale house in this city, has now added an improvement by putting up wires and establishing a direct telegraphic communication with one of these "Commercial Agencies." Every new customer presenting himself is duly endorsed by a favorable report through this medium before a sale is completed. It has required considerable time, heretofore, to send a clerk in person, but on the improved system, while one partner is showing off the silks and shoddy-mixed broadcloths under a skylight, (so as to increase the gloss of their surfaces as much as possible,) the other retires, clicks a few strokes, and learns—"owns farm worth $8000 clear, failed once five years ago, good—," and returns to assist in bowing and assuring the stranger that he can have the goods on any terms he chooses. This is, we believe, a new use for lightning, and one which must affect its reputation for politeness and general efficiency, as it certainly has facilities for saying the most pointed truths in a very smooth way.

Cultivated Mechanics.

"The Operative Mechanic is the steam engine of the world, and when his mind is stored with the truths of science, and the general information which he can readily acquire, from study, in his leisure hours, he is entitled to a place in the highest ranks of society. An intelligent practical mechanic, having a mind well stored with a knowledge of the arts and sciences, and the power to converse readily upon general subjects, can take the highest stand among the proudest of men. He invariably becomes a man of character in the community, and is capable of securing a position in the world that mercantile, professional, and speculative men seldom attain Educated mechanics shine in public life, and particularly in legislative bodies, much more brilliantly than mere book scholars, whose ideas of practical life are purely theoretical."

We copy the above from an exchange, and agree with every part of it, except the last sentence. It should have read "Educated mechanics *can* shine in public life," &c. But few mechanics rise to what is called *distinction in public life*—that is, as politicians; but *we* place very little value on this distinction, now-a-days. The mechanic who does his work well, who is honest and intelligent,, and, as a natural consequence, progressive, always *shines*.

Errors of the Press.

On page 171, appended to the article on Tea, it is stated that 40,244,000 *tuns* of tea were shipped to the United States during 1856 it should have read *lbs.* instead of *tuns*. This typographical error was a weighty, but not a dangerous error. None of our readers—abounding as they do in that charity for the failings of humanity to which we confess with all fellow mortals—would suppose that we meant to charge each man, woman, and child in our country with using up nearly two tuns of tea per annum. Inveterate as some of our tea-drinkers are, we have enough of charity not to charge the worst of them with drinking more than a pound per week. If the greatest tea-drinker in our country considers this figure too high, we will cheerfully cut it down to the T square standard, upon proper information received on the subject.

Errors presented in our columns give us unpleasant, and often painful feelings, because we take pains, and have strong desires to see everything correct, and in proper place; but with the greatest care that can be exercised errors do occur, and unintentional though they be, we regret them—but "to err is human."

In connection with this subject the following anecdote is not inappropriate:—

"A Glasgow publishing house attempted to publish a work that should be a perfect specimen of typographical accuracy. After having been carefully read by six experienced proof-readers, it was posted up in the hall of the University, and a reward of £50 offered to any one who should detect an error. Each page remained two weeks in this place; and yet, when the work was issued, several errors were discovered, one of which was in the first line of the first page."

When such was the case in a city long celebrated in Great Britain for publishing the finest and most correct editions of the classics, what is to be expected in a newspaper which must necessarily be hurried through the press *while it is news*; and where the compensation will hardly afford *one* "experienced proof-reader," let alone six. The wonted accuracy of our papers is really astonishing.

Exhibition of the Metropolitan Mechanics Society, Washington, D. C.

The Annual Exhibition of this Institution opens at Washington on the 2nd proximo, and promises to be a highly creditable affair. A large and substantial building of wood, several hundred feet in length, has been specially erected on Louisiana Avenue, and goods are now being received. The Exhibition will comprise new inventions, machinery, industrial manufactures, scientific and artistic productions, etc. The building is located in a very central and conspicuous part of the city. The Inauguration of the new President will bring thousands of strangers to the Capital, so that the attendance at the Exhibition will doubtless be large. Those who desire space should direct to Chas. F. Stansbury, Esq., Esq., Washington, D. C., who is the General Agent.

Competition for Russian Work.

A report is abroad that Russia has awarded the palm to America for vessels, but decided that in machinery, and es pecially in the construction of marine steam engines, we are decidedly behind both England and France. This, if true, is calculated to rouse the spirit of that large and generally quite active class of mechanics in our country who are engaged in this department of engineering. Russia is now actively pushing forward a most magnificent system of internal improvements, in which America, to sustain her reputation, should be particularly prominent, but such does not seem to be the fact to so large an extent as we should have anticipated.

The London *Engineer* of January 30th remarks, that "for the last few weeks Russia has given very extensive orders to French houses for railway engines, tenders, and wagons [cars.] Machines for making sugar from beetroot, and a great quantity of distilling machines, have also been ordered. At MM. Derosne et Cail's establishment, the great engine makers in the *Quai de Bille*, 3000 men are hard at work, all on Russian account."

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Rheumatism and Cider.

The *Medical Reformer*, in a late number, speaks as follows of cider in this disease :—

"I have been using cider in acute rheumatism with much satisfaction. I think more of it than of lemon-juice. Either new or old cider answers equally well. It sometimes purges. I sometimes combine with it a little laudanum.

As a beverage, it is the most wholesome known. To the stomach it is—in moderate quantities—the most genial of all drinks. It should be more generally used. As rheumatism probably depends upon a faulty retrogression of the products from the muscular tissue, cider may hasten this, and thereby remove it."

[As a beverage for a dispepsical person its recuperative qualities can be endorsed without mental reservation. Foreign wines and Schneidam schnapps are vile stuffs in comparson with genuine American cider.

Report of the Commissioner of Patents for 1856.

To the Speaker of the House of Representatives :

Sir—The condition of this Office remains nearly the same as at the time of my last Annual Report. The business has been constantly increasing, but the force employed has thus far been found adequate to its prompt and thorough discharge. The number of cases in the Office, undisposed of at any one time throughout the year, would probably average about one hundred. At the end of the year it was only forty. It is hardly practicable to have less unfinished business awaiting the action of the Office at one time, or to dispose of applications more promptly than has been done with most of the classes of cases during the past year.

The following tables will show, in a brief and general way, many important facts connected with the business of the Office, and also in respect to its present condition :—

Statement of moneys received at the Patent Office during the year 1856.

Received on applications for Patents, Reissues, Additional Improvement, and Extensions, and on Caveats, Disclaimers, and Appeals	$177,965·00
Received for copies and for recording assignments	14,615·02
Received for old sash	8·00
Total	$192,588·02

Statement of expenditures from the Patent Office during the year 1856.

Salaries (including $6,695.28 allowed by Act of Congress, 18th August, 1856)	$86,626·11
Additional compensation per Act 22nd April 1854	2,332·65
Temporary Clerks	36,831·45
Contingent expenses	31,271·52
Payments to Judges in appeal cases	225·00
Refunding money paid into the Treasury by mistake	198·00
Refunding money on withdrawals	42,393·29
Total	$199,931·02

Statement of the Patent Fund.

Amount to the credit of the Patent Fund on the 1st of January, 1856	$62,512·54
Amount paid in during the year	192,588·02
Total	$255,100·56
From which deduct amount of expenditures during the year	199,931·02
Leaving in the Treasury on the 1st Jan. 1857	55,169·54

It appears from these statements that the disbursements for the past year have been $7,343 greater than the receipts. This deficiency is chiefly owing to the fact that, by an item in the civil and diplomatic appropriation bill of the last Session of Congress, extra compensation, amounting to $6,695·28 was allowed to certain Assistant Examiners and clerks in the Patent Office for services rendered prior to the 4th of March, 1855. But for this allowance—which cannot at all events be regarded as a legitimate expenditure for the year 1856—the disbursements would have exceeded the revenue only $647·72.

The accompanying tables also show that the business of the Office has increased during the year in about the usual proportion. There have been 525 more applications, 118 more caveats, and 478 more patents than in 1855.

It will be seen that the patents have increased in a much greater ratio than the applications. In other words there have been proportionably fewer rejections than during the previous year. This is probably attributable, in a very great degree, to progress made (both in and out of the Office,) in the knowledge of the proper principles and rules in accordance with which patents should be granted or refused. If perfection were attained in this respect, and if the condition of arts and inventions throughout the world were also thoroughly understood by both agents and Examiners, there should be no rejections at all. The applicant and the Examiner would come to one and the same conclusion. Disagreement would be as impossible as in an arithmetical calculation. Hence every advance made in that direction tends to diminish the difference between the number of applications and the number of patents.

The following table will show how the number of patents in the United States compares with those in England and France for several years past.

Table showing the number of Patents granted in England, France and the United States, respectively, during the last ten years.

Year.	England. Patents.	United States. Application for Patents.	United States. Patents Granted.	France. Patents.
1846	493	1212	619	2088
1847	493	1531	572	2150
1848	388	1628	630	853
1849	514	1955	1076	1477
1850	513	2193	995	1687
1851	355	2258	869	1836
1852	469			
1852	*Amendment Act.* Applications for provisional protection. 1211	Patents passed thereon. 914	2639	1020 2169
1853	3045	2185	2673	958 3111
1854	2764	1876	3324	1902 3499
1855	2958	2044	4435	2024 4056
1856	——	——	4960	2502 ——

The number of patents issued from this Office has now grown to exceed those granted by the English Office, and the number of applications is greater than are made to that of France. In these two countries there is no examination of applications in the manner practiced here, and nearly all patents applied for are granted.

Most of our present laws and regulations relative to patents have been derived from England, and it is probable that other features of their system might be studied with advantage as a means of improving our own.

One of these is the provisional protection or temporary patent for six months. This is somewhat in the nature of our caveat, but if modified so as to be adapted to our system would be found an improvement upon our present practice.

A caveat under our law only operates prospectively. It prevents the Office from issuing a patent on any application made within one year subsequent to the filing of the caveat without first giving the caveator a chance to be heard. But if an application for the self-same invention had been made one day previous to such filing, no notice whatever would be taken of the caveat. The only person employed to prepare the papers for the caveat, if sufficiently unscrupulous, can make an application himself for a patent for the same invention. If he anticipates the filing of the caveat by a single day he may, at a subsequent date, obtain a patent of which there is now no power in this government to deprive him until it has run its full length of fourteen years. Such a circumstance is known to have actually occurred in this Office.

If, instead of a caveat, which only operates upon applications subsequently made a provisional protection had been allowed which would apply to any case pending in the Office a six months' protection of this kind would be far preferable to a twelve month's caveat.

This protection might be allowed to issue as a matter of course, to be kept secret at the option of the applicant, who would receive a certificate showing his right to a provisional protection. After obtaining such protection no patent for substantially the same invention should be allowed to issue to any other applicant, whether prior or subsequent in date of its being filed, without giving the holder of that protection an opportunity to show his superior title to such patent. And if before the expiration of the provisional protection an application were made by the holder thereof for a full patent, such patent, if allowed, might, at the option of the applicant, be dated and made to relate back to any day of the six months of the provisional protection, as is the case in England.

It might, perhaps, be deemed expedient to declare that no person should be made liable for the infringement of the provisional protection without being actually notified of its existence, but even with that qualification it would be a great safeguard of the rights of the inventor, and would prevent many outrageous wrongs, for which our present law affords no protection or remedy.

Another feature of both the English and French regulations is, that the patent fee is paid by instalments, thus allowing the patentee, in effect, to surrender his patent whenever he finds it is of less value than the instalments still unpaid. A large majority of patents are worthless. The course pursued in England and France permits the inventor to feel his way, by degrees, venturing from step to step with the power of retreating at any moment he feels inclined to do so.

For instance, in England, the applicant, in the first place, obtains a provision protection for six months. This affords him time to perfect his invention, protects him, in the meantime against piracy, and gives him an opportunity to satisfy himself to some extent, whether it will be prudent for him to venture further. If so, he gives public notice of his intention to that effect, and if no opposition is then made, his patent issues as a matter of course, taking date at his option on any day of the six months of his protection.

If before the end of three years from the date of his patent, he chooses to pay the further fee fixed by law, his patent possesses vitality for four years longer ; and if, before the end of that term, he pays another prescribed fee, the patent is continued for seven years more.

In this manner the revenues of the Patent Office are paid in a larger proportion than under our practice, by those who derive most advantage from their patents, and can therefore best afford to pay them. If the same regulation existed here, the fee paid in the first instance might, in such cases, be reduced to a much smaller sum, in order to produce a given revenue, than under the present system. But the greatest advantage presented by such a regulation, is, that it would wipe out of being, at an early stage of their existence, a large proportion of patents which are worthless and unused, and only stand in the way of other inventors.

During nine months prior to the first day of July, 1853, two thousand and forty-seven patents were issued by the English Office. The fee necessary to prolong the existence of each of these, after the end of three years from its date, was only paid on 619 of the number, leaving 1428 to expire at the end of three years.

Under our system, these would all have continued in existence for the whole fourteen years. The majority would have been valueless, and only serve as a clog upon other inventors, inasmuch as many meritorious and useful inventions, subsequently made, might be found so far to interfere with some of these worthless patents, that the former could not be used without paying tribute to the owners of the latter.

A French patent is granted for fifteen years, but becomes void upon a failure to pay a certain annual duty. A very small percentage of them ever continue their existence throughout the whole period of fifteen years.

It has been stated in the public prints that of the 2088 patents issued in France in 1846 less than 300 remained in force ten years afterwards. The rest having been swept away by the regulation requiring several installments of the patent duty.

These payments are inconveniently frequent in France, and perhaps are more numerous in England than would be deemed expedient, but with proper modifications the principle which lies at the bottom of these regulations has much to recommend it, and might, it is believed, be advantageously adopted by us.

Something in the nature of the English writ of *scire facias*, might also, with advantage, be incorporated into our law. At present there is no power in this country to repeal a patent under any circumstances. Although the very day after it has issued it should be ascertained that the invention was pirated by the patentee from the real inventor, or although for any other cause the patent may have been erroneously granted, it must remain in existence the whole period of fourteen years. It is true, in these cases, the patent would be invalid, and if granted to the wrong person, another patent may be issued to the real inventor. Still, the invalid patent is allowed to exist, and may be made productive of much mischief, enabling the holder to impose upon the public, either by the sale of a worthless patent, or by extorting money for permission to use the invention, which most persons would pay in preference to engaging in litigation with the holder of a patent, in pursuance of the statute, and allowed by law to continue its existence.

Another regulation of the English Patent Office which deserves to be imitated, is, that by which all the patents that are issued are directed to be printed separately, and sold at prices which will merely defray expenses. I regard such an arrangement as being in an eminent degree useful and desirable for the following among other reasons :—It would enable the Office to furnish complete copies of any patent—including the drawings—for one-tenth part of what they cost at the present time. It would afford the means of placing a copy of all the patents in the room of each of the principal Examiners, and wherever else they were needed, for the convenience of the Office or of the public, instead of having only one single copy, as at present, for all to refer to, which is wanted often by two or more persons at the same time, and which becomes worn out so as to require to be re-written after the end of a few years. It would be a great source of economy in another particular, as the Mechanical Reports of this Office might thus be abridged in a very great degree, as nothing further would be necessary in the Annual Reports than to make a complete and full analytical index of all the patents that had been issued through the year. If, in addition to what is above suggested, a copy of all the patents for the year, with the drawings attached, were deposited in the office of the Clerk of each District Court of the United States, nothing further in this respect would seem to be requisite. The Reports would point out the general nature of the inventions made within the year ; whoever desired to obtain more minute information as to any particular case, could, for a few dimes, obtain from the Patent Office a complete specification and drawing of the invention, and every State would be furnished with at least one complete copy of all the patents deposited in the very place where it would be found most useful and convenient for the purpose of reference, by litigants and inventors. To make the system complete, however, a like publication should be made of all previous patents, and also a complete analytical index of the whole. This would indeed be a work that would be worthy of the Office and of the country, I feel a strong desire and confident hope that this work will soon be commenced, and consummated with all convenient dispatch.

Some of the other regulations of the English and French Offices are of more doubtful expediency. Among these is the entire dispensing with all examinations, such as are made in this Office. Such examinations are, doubtless, productive of much good ; but, at the same time, I think it by no means certain that this portion of our efficient action is placed precisely upon the correct footing. I am every year yielding more and more to the conviction that the decisions of the Office in reference to patentability, should not be peremptory, but merely advisory, and that some system like that suggested in my last Annual Report might, with great advantage, be substituted for that now in force.

But radical changes should be made with caution, and upon the clearest convictions that such changes will prove salutary ; I am therefore hardly prepared to urge such alterations at once. But I feel firmly impressed with the belief that we shall come to this result at last, and that the right of an inventor to protection will not be left to the arbitrary determination of any officer under the government.

The propriety of changes in the rate of patent fees has been urged upon the attention of Congress in several of the last Annual Reports, and nothing new suggests itself to my mind, on that subject at present. Fully confident that the changes recommended would prove salutary, and that a rate somewhat increased over that now in existence, is actually necessary to enable the Office to effect completely the purposes for which it was established, the favorable consideration of Congress is again invited to this subject.

All which is respectfully submitted.

C. Mason.

U. S. Patent Office, Jan. 31, 1857.

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S. M., of Mo.—Gunpowder has been proposed and tried as a substitute for steam many times. The chief difficulty is not so much in the suddenness of its action, for powder can be manufactured to burn with any required degress of slowness, but in the accumulation of sooty mat ter in the cylinder.

C. A. C., of Mass.—John Bourne's "Catechism of the Steam Engine," costing 75 cents, is a tolerable elementary work on steam engines generally, and Z. Colburn on the Locomotive, costing about $1 or $1'25, is the best on that special departmentof the subject. The first named is English, which detracts much from its value, and both are rather old.

E. H. C., of ——.—If you will give us your post office address, we will send you one of our circulars of information. Take some fine cotton and place it in a stoneware cup, then pour amongst it some strong nitric acid, and allow it to digest for ten minutes. Now pour off the acid, and wash the cotton thoroughly in soft water until no taste of the acid is left, now dry it, and you have gun cotton.

C. W. W., of Ky.—By reference to the last Volume of the Scientific American you will get the information you want in regard to molding india rubber. J. A. Kissam, of this city, can furnish you with the scales and measures. He will write to you.

George Conley, of Kingwood, Preston Co., Va., wishes to correspond with a manufacturer of saddle-trees and shoe pegs.

E. E. W., of N. H.—The annual subscription to Silliman's Journal is $5.

S. I., of ——.—See advertisement of the honey recipe in another column. We have not one to sell nor to give away.

J. M. H., of Pa.—The New York Atlas is published by Herrick & Ropes, 44 Ann st. The Commercial Register is published at 140 Fulton st., by Messrs. Quin. Don't know Dr. Grindle.

S. C., of Va.—You say that your specification was returned to you three years ago by the Commissioner of Patents, with the request that you make amendments to it; that you have entirely neglected to attend to the request of the Commissioner; that during this interval some other party has taken out a patent for the same invention, and you now desire to know what you can do to recover your lost rights. We advise you to drop the matter entirely, and allow the party who has secured the patent to enjoy its use without interruption. You have entirely neglected to attend to the Commissioner of Patent's requestand we see no reason, in any point of view, why you have not forfeited you rights. You have pursued a very short-sighted policy; and if you had employed a faithful agent, you would have been saved the mortification arising out of this neglect. We think you will meet with much difficulty in getting your claims through the Office.

C. D., of N. J.—We will endeavor to give your communication attention in our next; hitherto we have not been able to do so.

P. V. R. V. W., of Washington.—We do not discover anything new or patentable in your method of fastening railroad rails to their chairs. It seems to us to be an old device.

W. H. H., and others.—Parties who persist in writing to us without signing their names to their letters, will find us just as persistent in refusing to notice them. We will pay no attention to anonymous letters.

C. A., of N. Y.—We do not know of any manufactory of printing presses at the price you specify, viz., $10.

C D., of N. J.—Mathematically, the top of carriage wheels do move faster than its bottom; but it is a question of an unprofitable nature.

A. K. G., of N. Y.—By reference to Volume 4, Scientific American, you will find a great number of engravings of rotary engines.

G. W, B., of Miss.—We are not acquainted with any published work on Sign Painting.

D. K. B., of Md.—If you will send us a sketch and description of your safe lock we will examine it There are a great variety of such locks, some valuable, and others less so. We can give you but little advice on the latter branch of the subject.

G. C. H., of Ohio—Minifie's work on drawing is an excellent preliminary work. It is both mechanical and architectural.

J. D. Hitt, M. D., of Warrenton, Va., desires to open correspondence with some one who can supply a machine capable of pegging shoes with facility, and at the same time making the peg.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, Feb. 21, 1857:—

C. D. of N. Y., $55; G. D., of Pa., $25; D. E. S., of O., $25; S. Van S., of N. Y., $100; D. T., of N. Y., $30; R. C. S., of N. Y., $55; S. T. S., of Mass., $30; J. M. G, of N. Y., $30; G. S. M., of Ill., $10; J. C. K., of N. J., $80; W. B. of N. J., $20; S. T. H., of Ill., $5; V. R. D., of Ill., $25; L. W., of L. I.. $35; S. B., of N. Y., $35; S. R. of N. Y., $30; W. D. A., of N. Y., $250. J. M., of Ind., $100; J. M., of N. Y., $30; M. G., of O., $35; M. & P., of Ky., $25; E. L. E., of R. I., $20; G. W. F., of Pa., $25; J. G., of Pa., $65; J. R. G., of Wis., $30; J. F. B. of Mass. $30; H. S., of Va., $30; S. & L., of Ill., $30; F. O., of R. I., $10; V. & S., of N. Y., $30; J. H., of N. Y., $60; J. D., of N. J., $57; L. H. & Co., of Me., $40; F. N., of L. I., $30; S. R., of N. Y., $25; K. G., of Pa., $25; I. B. D. of Tenn., $25; J. H., of Conn., $57: S. H. & Co., of Vt., $30; J. M., of N. Y., $30; G. D. H., of Ill., $25; W. F. E., of N. Y., $25: J. B. T., of N. Y., $35; W. M., of N. Y., $15; J. R. P., of N. Y., $100; W. & C., of O., $30; G. W. A., of N. Y., $25, H. R., of N. J., $27; G. P. G., of N. Y., $27; T. H., of N. Y., $25; G. G. F., of N. Y., $5; L. W., of L. I., $25; W. A., of Pa.. $20.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Feb. 21, 1857:

G. W. A., of N. Y.; S. B., of N. Y.; D. E. S., of Ohio; H. R., of N. J.; G. P. G., of N. Y.; A. M., of Pa.; G. W. F., of Pa.; V. R. D., of Ill.; G. D., of Pa.; M. & P., of Ky.; T. H., of N. Y.; A. & H., of Miss.; S. R., of N. Y.; J. B. D., of Tenn.; K. G., of Pa. W. F. E., of N. Y.; G. D. H., of Ill.; G. G. F., of N. Y.; C. D., of N. Y.; L. W., of L. I.; W, A., of Pa.

Important Items.

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December 9th, 1856. 24 2*

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INVENTIONS, DISCOVERIES AND INFORmation which, in the opinion of the London Society of Arts, are now required by the public. This list which contains 47 subjects, embraces wants in many of the Mechanic Arts. The list and explanation occupies a portion of three pages of J. R. Stafford's Family Receipt Book, which book will be sent free of postage on receipt of Ten cents or stamps, by J. R. STAFFORD, Practical Chemist, 16 State st., New York. 21 8*

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NORCROSS ROTARY PLANING MACHINE.—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb, 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.

Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS, Office for sale of rights at 27 State street, Boston, and Lowell, Mass, 45 6m*

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Science and Art.

Improvement in Washing.

"The wife of an American agriculturist has been experimenting in soaps, and finds that the addition of three-quarters of a pound of borax to a pound of soap melted without boiling, makes a saving of one half in the cost of soap and three-fourths in the labor of washing, improving the whiteness of the fabrics; besides the usual caustic effect is thus removed and the hands are left with a peculiar soft and silky feeling, leaving nothing more to be desired by the most ambitious washerwoman."

[The above comes to us from a cotemporary marked "all around," in order, we suppose, to direct our attention to its valuable character. The addition of borax to common soft soap will render soapsuds more gentle in their effects upon the hands in washing, but at an increased, not a diminished, expense. Borax is a salt composed of boracic acid and soda, with the latter (the alkali) predominating.

The "Washing Fluid" sold in bottles for twelve and twenty-five cents—according to their size—in stores, is superior to borax for washing purposes. A gallon of it can be manufactured for four cents. Take one pound of common sal-soda and dissolve it in half a gallon of warm soft water; then stir into a separate vessel containing half a gallon of soft water, half a pound of fresh slacked lime, and allow it to settle for fifteen minutes. Now pour off the clear lime water into the vessel containing the dissolved soda; stir all up and allow it to settle; the clear liquor so formed is the famous washing fluid. Common sal-soda contains carbonic acid; the lime has a greater affinity for it than the soda has, therefore the acid unites with the lime, forming solid, fine white chalk, which falls to the bottom, leaving a clear caustic lye, capable of uniting with grease and oil in cloth, rendering them soluble in water. This washing fluid must be used very sparingly in washing, because, if used in excess, it *eats* the skin of the hands, rendering it very thin and tender. This washing fluid forms the basis of all the labor-saving soap recipes hawked about the country for sale.

About a quart of this fluid mixed with five gallons, of rain water, is an excellent liquid in which to boil unbleached cotton cloth for two hours, prior to putting them out on the grass to bleach. The cloth should be rinsed in soft water before laying it down on the grass. This simple process, by assisting to remove the natural oil from the cloth, greatly facilitates the bleaching process.

This information will be very useful to many persons living in the country, because it is applicable to the bleaching of both home-made linen and cotton cloth.

To Render Textile Fabrics Water-Proof.

Take 1 pound of wheat bran, and 1 ounce of glue, and boil them in 3 gallons of water in a tin vessel for half an hour. Now lift the vessel from the fire, and set it aside for ten minutes; during this period the bran will fall to the bottom, leaving a clear liquor above, which is to be poured off, and the bran thrown away; one pound of bar soap cut into small pieces is now to be dissolved in it. The liquor may be put on the fire in the tin pan, and stirred until all the soap is dissolved. In another vessel one pound of alum is dissolved in half a gallon of water; this is added to the soap-bran liquor while it is boiling, and all is well stirred; this forms the water-proofing liquor. It is used while cool. The textile fabric to be rendered water-proof is immersed in it, and pressed between the hands until it is perfectly saturated. It is now wrung, to squeeze out as much of the free liquor as possible, then shaken or stretched, and hung up to to dry in a warm room, or in a dry atmosphere out-doors. When dry, the fabric or cloth so treated will repel rain and moisture, but allow the air or perspiration to pass through it.

The alum, gluten, gelatine, and soap unite together, and form an insoluble compound, which coats every fiber of the textile fabric, and when dry repels water like the natural oil in the feathers of a duck. There are various substances which are soluble in water singly, but when combined form insoluble compounds, and *vice versa*. Alum, soap, and gelatine are soluble in water singly, but form insoluble compounds when united chemically. Oil is insoluble in water singly, but combined with caustic soda or potash it forms soluble soap. Such are some of the useful curiosities of chemistry.

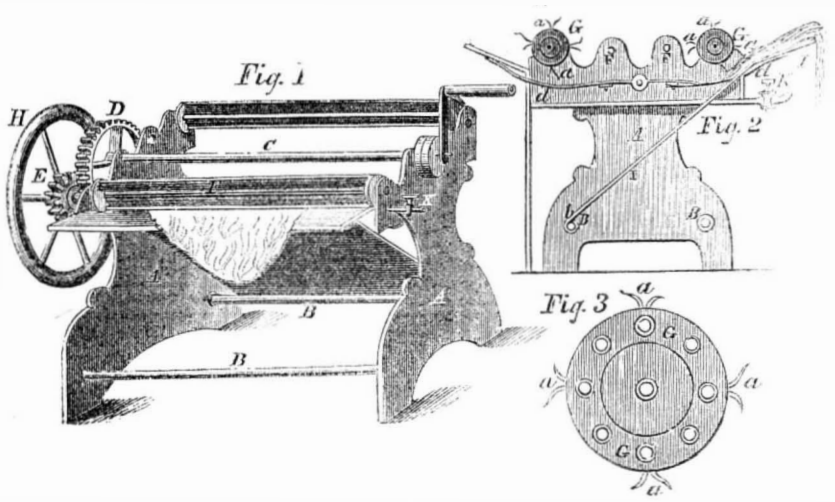
Pile Ointment.

Take 2 ounces of flowers of sulphur, 1 oz. of powdered nut galls, and 1 grain of powdered opium. Mix well together in fine lard, and keep it in a close glass vessel. This is a good ointment for one of the most common ills that flesh is heir to.

Two thousand nine hundred silk worms produce one pound of silk; but it would require 27,000 spiders, all females, to produce one pound of web. With a view to collect their webs for silk, 4,000 spiders were once obtained, but they soon killed each other.

A factory for manufacturing paraffine candles has been commenced at Los Angelos, Cal. The material from which they are made is tar obtained from the natural springs in that place.

SEPARATING BURRS FROM WOOL.

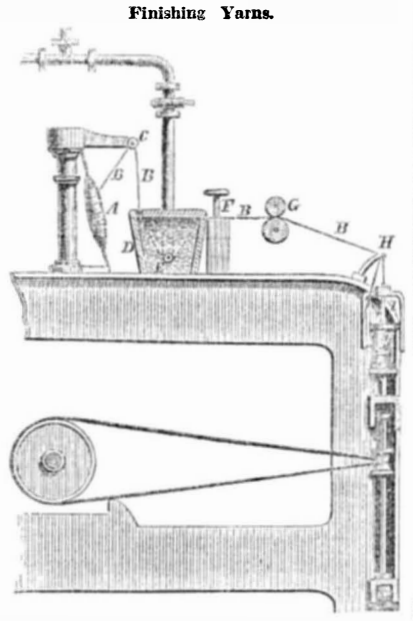


The accompanying figures are views of a machine for which a patent has been obtained in England by J. M. Baird, and which has been illustrated and described in the London *Engineer*.

The improvement consists in the employment of revolving arms, beaters, or switches, brushes, or elastic sp ings, made to act by manual or other power upon the face of the wool while being held between rollers to beat out burrs and other extraneous matters.—Hitherto it has been the practice to pick out the burrs by hand, and however dexterously the manual operation may be performed, it tears out a portion of the wool or fiber from the skin as well as the burrs, whereas, by the employment of beaters, made to give a spring-like blow or switch, little or no fiber is removed with the burrs.

Figure 1 is a perspective view of one of the machines complete; figure 2 is a vertical section, showing the boards on which the skins are placed on an incline; and fig. 3 is a view of one of the beaters or switches. The boards, instead of being inclined, may be placed horizontally. A A are the side frames of the machine, secured together by one or more girders or stretchers, B B. C is a shaft which works in bearings in the frame, A, and has keyed on one end the spur wheel, D, which gears into the pinions, E E, (only one of which is seen in the illustration.) fixed on the shafts, F F, to which the beaters are attached. G G are the beaters, which are preferred to be made circular; they have fixed on their periphery prongs or pickers, *a a*, for removing the burrs from the wool. The shaft, C, is driven by hand, steam, or any other power, which actuates the spur-wheel, D, and consequently the pinions, E E, which cause the beaters, G G, to revolve. To the pinion shaft is attached the fly-wheel, H, to regulate the motion of the machine. I is the board or table on which the skins or pelts to be operated upon are placed. This board is suspended by hinges at the end, *b*, to one of the girders or stretchers, B B, and supported at top by suitable springs, *d d*, fixed to the frame, A. The board and springs are so arranged that when the skins pass through the machine, in the event of there being any inequalities on the surface, the springs allow the board to yield and thereby prevent any part of the skin or pelt being injured. Any elastic substance is placed across the machine to make up for the thick and thin parts of the skin, and so cause the pressure to be as equal as possible in every place. Water is allowed to pass over the skins during the process, and is admitted through the perforated pipe, K, which is placed in the most convenient part of the machine. The apparatus can be made double-acting, as seen in fig. 2, where the skins are admited at either side; or single-acting. When the machine is started, the skins are placed by an attendant on the board, I, and allowed to pass up and down, or straight through the machine underneath the beaters, until the burrs or other extraneous matters have been entirely removed. Any number of beaters are employed, according to the size of the machine. The boards can be placed in any position most convenient to the operator; but the manner in which it is preferred to place them is as in the arrangement shown at fig. 2, where the washing process has the greatest advantage. The beaters can be made, if desired, with straight edges, although the form preferred is circular. When brushes are employed they may be placed in any suitable position, and worked by eccentric or rotary action. This is an improvement worthy of the attention of our wool and sheep peltry merchants.

Finishing Yarns.



This figure is a side elevation of an improved method of finishing the finer classes of cotton yarns, especially those designed for the manufacture of fine muslins. Yarns so treated produce more beautiful fabrics than has ever been done before with cotton of the same fineness. The inventor is M. Nelson, of England; the process was illustrated and described in the London *Engineer*. The yarn, when in the cop form, for example, is first steamed or boiled in water, and is then boiled in starch or any other suitable dressing material. The cops are then transferred to a frame, such as that represented in the illustration, and being placed in a row upon skewer holders, as at A, the yarn B is drawn off them, and passed over a guide rail, C, whence it descends into the box, D. This box is supplied with starch or other suitable dressing material, and is heated by means of steam, which is conveyed into it by the pipe E. The yarn, B, passes beneath this pipe, E, and being well saturated with the dressing material, leaves the box, D, and proceeds onwards between glass pillars, F, round one of which each thread may be turned, if necessary, to the rollers, G. Each thread is passed between these rollers, G, and once round the upper one, if necessary, to prevent its being drawn too rapidly off the cop. From the rollers, G, the yarn, B, passes through the guide eye, H, to the spindle and flyer at I. The yarn is wound upon the bobbin, J, by the ordinary spindle-and-flyer action. It is at this stage that a high degree of twist is given to the yarn, the starchy treatment removing the tendency to untwist, which the yarn would otherwise have. The starchy treatment also causes the loose fibers to be well incorporated with the body of the yarn, so that the finished material presents a comparatively fine and smooth appearance. The steam pipe, E, may either be carried through both ends of the box, D, or the end of the pipe may be turned up inside the box for the steam to blow out upon the surface of the starch.

A new remedy for cancer, credited to the Virginia *Medical Journal*, is going the professional rounds,—which is made of three parts of sulphate of lime to one of chloride of antimony. It may prove of great value.

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